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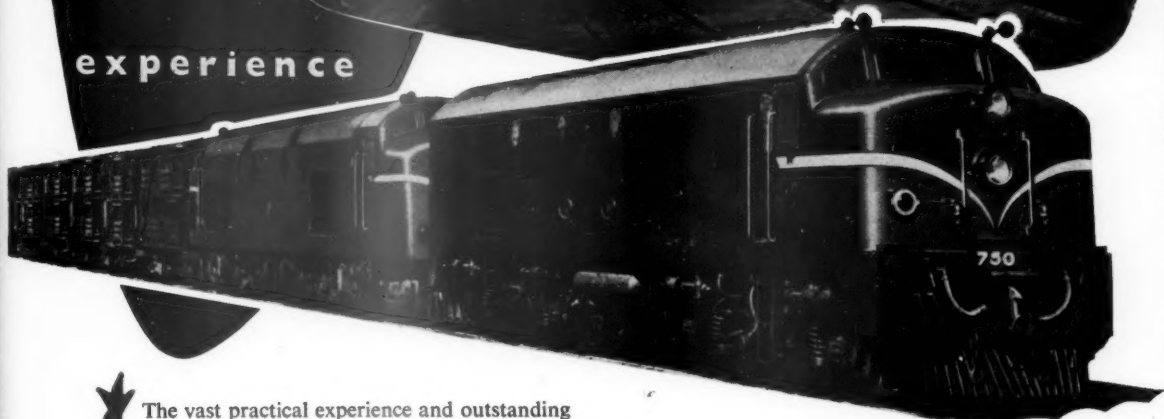
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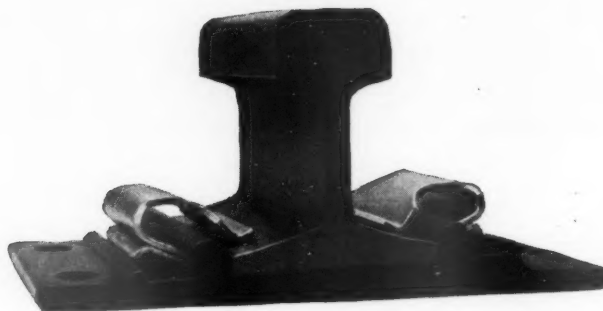
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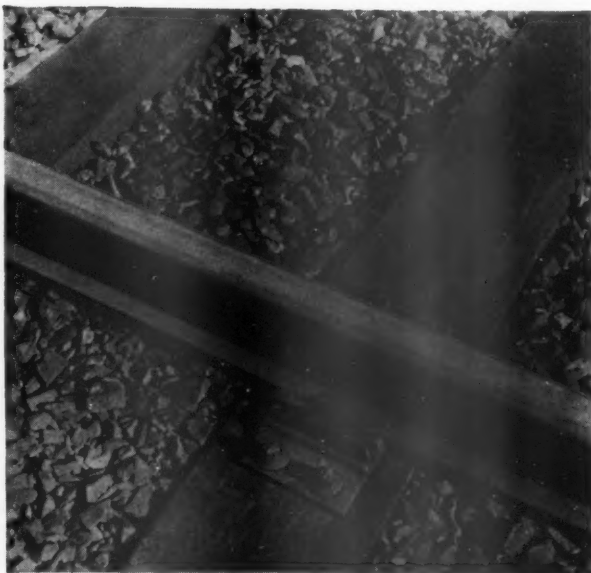
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[No. 15

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## Incentives in Moderation

THERE is little in the Budget introduced on Tuesday by Mr. Peter Thorneycroft, Chancellor of the Exchequer, to give relief to the railway industry in this country. The provision of further railway ships will be helped by the increase from 20 to 40 per cent in the investment allowance on new ship construction, which applies to expenditure which became due last Wednesday and expenditure from that date onwards. Certain railway officers—all too few—and executives in the railway manufacturing industry will benefit from the extension of graduated earned income relief to surtax payers. The only other relief of note affecting the British Transport Commission is the removal of the 1s. a gallon extra duty imposed on petrol and diesel fuel last December. As this relief was expected and promised, and is related to the easing of fuel supplies rather than taxation policy, it is only fortuitous that it should have been announced in the Budget speech. Hopes of assistance to manufacturers selling goods abroad have not been fulfilled to any great extent. Exemption from income tax and profits tax on trading profits earned abroad is to be granted to concerns which qualify as overseas trade corporations with their activities wholly overseas, thus helping to meet competition from less heavily taxed rivals.

It will be necessary for some companies to hive off their overseas undertakings as separate entities to take advantage of this. The Chancellor made it clear that this relief had no possible suggestion of an export subsidy about it. To qualify as overseas trade corporations, concerns dealing in goods manufactured in the United Kingdom must buy those goods at f.o.b. prices at a United Kingdom port, and the prices must be appropriate to a transaction between independent parties. The only relief will thus be on profits earned from that point onwards. It seems that manufacturers of locomotives and other railway material for export may be helped to some extent by these provisions, but clearly the relief will not be great and is likely to be nullified by impending increases in pay in the engineering industry. The "credit squeeze" continues and may even, by the increased power given to the Capital Issues Committee over long-term borrowing from the banks, be intensified.

## Higher Pay for Footplate Staff

IN agreeing last week to pay footplate staff the full increase of 5 per cent already granted to other grades, the British Transport Commission has shown itself aware that men are more important than the trades unions to which they belong. The National Union of Railwaymen and the Transport Salaried Staffs' Association accepted last month the qualifications as to increased efficiency and stability associated with the offer of higher wages, but the Associated Society of Locomotive Engineers & Firemen would not subscribe, holding that productivity and pay should not be so linked. No doubt it fears that if an agreement is reached that firemen shall not be carried on diesel and electric main-line locomotives its membership will decline. The Commission at first withheld payment of the extra 2 per cent increase, leaving footplate staff with the 3 per cent improvement they had enjoyed since November last. Some footplatemen, however, are members of the N.U.R., and the Commission, rightly, considers it impracticable to discriminate between employees according to their union membership. It has, also, no desire to "penalise particular members of a loyal team" because of failure to agree with one union. It is to be hoped that the A.S.L.E.F. will put the welfare not only of footplatemen but also of the railway industry above questions of its own prestige, and join in the forthcoming discussions with the Commission and the other unions.

## French Electrification Plans

ELECTRIFICATION is again the chief item in the new five-year plan for re-equipment of the French National Railways. The success of the 25-kV., 50-cycle system already in operation over a considerable mileage of its lines has decided the S.N.C.F. management in its favour for all future electrification schemes, other than those which provide for the future conversion of lines already mainly equipped for 1,500 V. d.c. The programme for 1957-61 provides for a rate of progress 16 per cent higher than that achieved under the previous plan. During the current year the electrification at 25 kV., 50 cycles, of the lines between Strasbourg and Basle, Dôle and Vallorbe, and Frasné and Pontarlier will be completed. The recent conversion of the Metz-Strasbourg section is described on another page. The "Nord-Paris" scheme, which includes the Paris-Lille line and various branch lines to Valenciennes and the principal coalfields in the Northern Region will be completed by the end of 1958. Extensions of the 1,500-V. d.c. electrification south of Lyons to St. Etienne and Valence are due also for completion next year, with the sections Valence-Avignon and Avignon-Nîmes to follow in 1959 and 1960 respectively.

## Further S.N.C.F. Schemes

ADDITIONAL electrification schemes to be undertaken under the third stage of the five-year plan and covering over 900 miles of line comprise: commencing this year,



the Paris-Châlons-Sarrebourg line with branches from Epernay to Reims, from Blesme to St-Dizier, from Lérerville and Nancy to Metz, and from Toul to Neufchâteau and eventually Dijon; and, commencing 1958, the lines between Creil and Aulnoye and between Busigny and Somain, to provide the direct link between Paris and the Belgian frontier, and the mines at Aniche and Anzin, also suburban lines of the Eastern Region from Paris to Meaux, and of the Northern Region from Paris to Mitry and to Orry-la-Ville. The plan also provides for extension from Tarascon to Marseilles of the Paris-Lyons-Tarascon-Nîmes electrification. When this programme is completed, the electrified lines of the French National Railways will total some 20 per cent of the whole system; they will carry 70 per cent of the total traffic, against 40 at present. The annual consumption of current for traction purposes will then be 3,500,000,000 kW-hr., a relatively modest figure compared with the total consumption in France, which will then probably exceed 75,000,000,000 kW-hr.

### Overseas Railway Traffics

**O**PERATING revenues of the Canadian National Railways for the month of February amounted to \$64,921,000. Expenses, taxes, and rents totalled \$61,159,000, making the net operating income for the month \$3,762,000. In February, 1956, operating revenues were \$59,424,000; expenses, taxes, and rents were \$56,605,000, and the net operating income was \$2,819,000. Canadian Pacific Railway revenues for February were \$37,651,740 (against \$37,063,207 for February, 1956) and railway expenses \$37,033,764 (\$36,095,506) so that net earnings were \$617,976 (\$967,701). This showed a considerable improvement on the previous month, and reduced the deficit on aggregate net earning for the two months to \$2,765,783. Costa Rica Railway receipts for February were colones 1,619,442 compared with colones 1,785,124 for February, 1956; the aggregate receipts for the eight months July-February were colones 12,564,429 (13,625,691). The most recent information from the Victorian Railways is that railway revenue for December, 1956, amounted to £A2,942,426, compared with £A3,002,736 for December, 1955. International Railways of Central America net revenue from railway operations in February was \$350,826 compared with \$383,302 in February, 1956, a decrease of \$32,476. The aggregate net revenue from railway operations for the period January 1-February 28 was \$702,598 (\$813,884).

### Institution of Locomotive Engineers Luncheon

**A**MONG the matters mentioned at the Institution of Locomotive Engineers annual luncheon last week by the President, Mr. J. F. B. Vidal, was an increase expected in membership of the Institution as the result of alterations in the articles of association of the Institution, which provide for establishment of a student grade, and definition of "locomotive engineering" in its most comprehensive sense as embracing the whole of railway locomotive, carriage, and wagon engineering. A brief description of the luncheon is given on another page. Mr. Vidal also expressed the hope that engineers would widen their interests to include political questions that concerned their profession and work, and also cultural matters. Sir J. Landale Train, Member of the British Transport Commission, the guest of honour, hoped that future managers in industry and transport would be recruited largely from engineers because of their first-hand knowledge of the personal aspect of management. A pleasing event after the luncheon was the presentation of the Institution's Gold Medal to Sir William Stanier, for his great services to locomotive engineering.

### Getting Under Way

**T**HE increasing momentum of the railway modernisation plan and its visible signs are the theme of the editorial signed by "The Man on the Line" in the current issue of *British Railways Magazine*. Many railwaymen,

he points out, are already seeing tangible signs in their daily work: new diesel trains, building work at stations and depots, installation of signalboxes and colour light signals, and laying of new track. The output of work on improvements this year is to be half as much again as it was in 1956, and in 1958 the plan, if all goes well, will be, in his words, "in top gear." The times estimated for completion are being cut down: that needed for the fitting of continuous brakes to all wagons is now reckoned to be eight years, and not 10, as originally estimated, and the speed of electrification work is being increased. Meanwhile, more fully-fitted and partially-fitted trains can be run as wagons are made available, and diesel passenger services introduced as units are delivered. There is every reason, "The Man on the Line" states, to be optimistic. The human element, however, must not be forgotten. Better service will not result from material improvements unless they are accompanied by constant hard work, vigilance, and keenness.

### The End of Conscription

**W**HAT the railway staff position will be in five years' time, when the last conscript will have completed his term of national service, it is impossible to say. It is to be hoped that, with the modernisation plan well under way, with its effect of making railway work—and, perhaps, if productivity increases and the financial position improves, railway wages—attractive, employment in all grades of British Railways will be such as to attract the right type of young man. In any case, the existing exemptions of certain operating grades from military service must tend to minimise the effect on the railway staff situation of the Government decision to taper off conscription. On the other hand, there will presumably be fewer youths who join the railway service as a stop-gap employment, and increasingly less wastage through the failure of young men to return to their railway work after national service. The Transportation and Movement Control units of the Army Emergency Reserve of the Royal Engineers will gain in so far as they will soon consist entirely of volunteers who should, by their keenness, make up for lack of numbers.

### Channel Tunnel Project Revived

**T**HE statement last week by Lord Mancroft, Parliamentary Secretary to the Ministry of Defence, that the Channel Tunnel was "something which we shall have to look at again" seems to make its construction less unlikely than it has been for some time. In an era of nuclear weapons there can be no real strategic objection. Lord Mancroft agreed that this was so, but asked who would meet the cost, estimated at £80-£100 million. The Government is reported to be unable to agree that the tunnel would regain for the surface route the traffic now tending to go by air, or that the expenditure would be justified in the improved freight and passenger services. With railways, one objection has always been the restricted British loading gauge; but it has been found profitable to build special freight and passenger stock for the train ferry services. There is now no insuperable objection, on the ground of exhaust fumes, to long road tunnels, so that a tunnel combining railway tracks and roadways may be built, in time. With the continued rise in the standard of living on both sides of the Channel, involving increasing personal travel and exchange of commodities, the project is worth close study.

### New Air Terminal Over Underground Lines

**T**HE site of the existing air terminal at South Bank, adjacent to Waterloo Station, is due to be vacated by September, 1957, and consequently an alternative site was sought for London's Central Air Terminal for the use of all airlines served by London Airport. In its search, a working party set up by the Minister of Transport & Civil Aviation considered a proposal for constructing a large



concrete platform over part of the Cromwell triangle, formed by London Transport Underground tracks, to provide the necessary site. Such a platform, with an area of about 68,500 sq. ft. and spanning the western leg of the triangle—connecting Kensington High Street and Earls Court stations—was considered ideal for a temporary terminal, as it is at the London end of the new Airport Highway being created by the Cromwell Road extension. On the recommendation of the working party this scheme was approved by the Minister in March, 1955. It was agreed that the work of constructing the platform should be carried out by the London Transport Executive at the cost of Air Terminals Limited, a company formed by British European Airways, British Overseas Airways Corporation, and Aer Lingus. The whole of the 1,080 tons of steelwork was erected in just over three months, and despite the awkward angles of some of the joints, only two minor adjustments had to be carried out on site. Construction of the first stage of this work, described on another page, is now virtually completed.

### York Railway Museum

**T**IME is passing only too quickly, but there seems still to be hope that a convenient site will be found in the South of England for a transport museum, before potential exhibits are destroyed, lost, or damaged by exposure to the weather. Meanwhile, it is good news that the Large Exhibits Section of the York Railway Museum is to be re-opened on Easter Saturday. It has been closed since the New Year after the departure of the G.W.R. 4-4-0 engine *City of Truro* for special service. The removal of this locomotive gave the British Transport Commission an opportunity to effect some reorganisation. New exhibits include two locomotives, the N.E.R. "Tenant" class 2-4-0 No. 1463 and the G.W.R. Ivatt Atlantic No. 251 (which has never before been seen on permanent exhibition), also the mock-up of the cab of the British Railways Class "8" *Duke of Gloucester* 4-6-2 locomotive. Much of the existing material has been re-sited. A section has been formed devoted to the history of signalling. All this will greatly increase the attractiveness of the only museum in Britain concerned exclusively with railway history. To bring the Railway Museum into line with the other museums in York, it has been decided to make an admission charge of 6d. to the Large Exhibits Section—which, besides being a useful addition to revenue, will restrict entry to the more serious-minded.

### Fog Signalling and A.T.C. in Italy

**O**N the Italian railways, where the signal aspects bear a greater resemblance to those found in Great Britain than do those of any other Continental country, it has been customary to use detonators in foggy weather, under regulations very similar to those in force here, so that it is not surprising to learn from an article by Signor F. Cesari in *La Tecnica Professionale* that changing conditions are making it less easy to staff the fog posts as thoroughly as once was possible, not to mention the fact that the cost of doing so is now much heavier than it was only a few years ago. It has been decided, therefore, to dispense with detonators on some sections under certain conditions and make use of approach warning boards in rear of the signals. Such have already been applied on some routes where detonators were used. At the same time experiments are being conducted with two or three forms of A.T.C., giving either a fixed approach warning to a signal, whatever its aspect, or repeating its indication on the train in combination with a vigilance push button, speed control and brake application. The Piacenza-Voghera and Milan-Parma lines have been selected for these first trials. Experiments also have been made with continuous cab signalling, for which a certain number of locomotives have been fitted, running over those routes, such as the Rome-Naples and Bologna-Florence lines, where there is automatic signalling controlled by coded track circuits.

### Home Market for the Locomotive Industry

**P**OSITIVE recognition of the importance of a steady and secure home market for exporting industries was at last accorded by the Government last week, when it amended the Electricity Bill to restrict the powers of the proposed Central Electricity Generating Board to manufacture equipment to "anything required by the . . . Board or by an Area Board for the purposes of research or development of for the repair or maintenance of their equipment," leaving the manufacture of heavy plant for the industry in the hands of private builders. This need for a home market applies not only to manufacturers of electrical plant but also to British builders of railway locomotives, whose home market is very greatly reduced by new construction by British Railways of motive power in their works inherited from the former railway companies. It is to be hoped that this will be recognised, and quickly, by the Government.

Just as the chain of nuclear-powered generating stations now being built will stimulate the demand for electrical plant of all kinds, the modernisation plan for British Railways, which involves the changeover from steam to diesel and electric motive power, demands large numbers of diesel and electric locomotives—a demand which will continue for many years. This is the time to give the British locomotive manufacturing industry the utmost support by ensuring that all new motive power units are built by private industry, so ensuring a considerable home market which can form the base for export activities which will benefit not only the industry, but the country as a whole. The locomotive industry, which is quite capable of supplying all foreseeable requirements of British Railways, should be supported now, and no time should, or need, be lost in making the necessary adjustment in organisation.

In introducing the amendment to the Electricity Bill, Mr. Reginald Maudling, the Paymaster-General, quoted arguments supporting the analogy which were considered by the Government before it decided to limit the powers of the Central Electricity Generating Board; without the amendment the latter would have been accorded full authority to manufacture its own plant. This power might or might not have been used, but it created the possibility of manufacture by a nationalised undertaking in competition with private industry and might even, as some Members made clear, have been used as a "back-door" method of nationalising the heavy electrical manufacturing industry. The main argument was that the home market was of the utmost importance to manufacturers who exported electrical plant. In current conditions the manufacturers exporting plant had to be satisfied with exiguous profit margins. To maintain their position on the export markets, he pointed out, they must have a secure base in the home market from which to operate. It had been suggested that this base might be undermined if a private industry had to face competition from a nationalised industry which concentrated on the home market and had no power to export.

It is striking testimony to the sound common sense of these considerations that they should have led the Government to change its mind. Some of them could be applied with equal force to the manufacture of locomotives by the British Transport Commission. Private builders in this country are facing severe competition from foreign firms in the export market, and are having to accept very low profits to obtain orders. This makes the matter one of urgency. A stable home market, with orders large enough to produce types of locomotives in economic "runs" and consequently at lower prices, with increased opportunities of testing locomotives in service and so of gaining valuable operating experience, would be of immense benefit to the industry, and, in the long run, to the country, which needs all the export trade that can be obtained. As far as British Railways are concerned, the question is not one of refusing new powers to the British Transport Commission, but simply of ensuring that the relatively small amount of new construction of motive power units, which takes up only a small proportion of British Railways works—perhaps less than 10 per cent—is allotted to private builders. The small

excess railway works capacity could relatively easily be turned over to repairs.

It has been argued that locomotives constructed by private industry would cost British Railways more than those built in the railway works. The fact that the overhead costs in those works are shared between maintenance and new building may tend to disguise the true figure. There is no reason to think that locomotives bought from private manufacturers would cost British Railways more than those built in their own works. Indeed, if the same basic designs of locomotive could be built for home railways and for export, as is already the case in North America, British Railways would reap the benefits of the low prices and prompt deliveries obtainable from long runs as much as the customer abroad. The benefit to the country of expanding overseas markets is incontrovertible and the argument that the railways need their own manufacturing capacity as a safeguard against the quoting of unnecessarily high prices by outside industry has ceased to hold good with the passing of the Restrictive Trade Practices Act, which effectively prevents the quoting of "ring" prices.

Cessation of new construction in British Railways works need not entail unemployment or waste of resources. As already stated, far the greater proportion of the work being carried out at the major centres is on maintenance rather than new building. Furthermore, the special skills required to deal with electric and diesel motive power are such that the amount of maintenance, particularly heavy maintenance, carried out at main centres as opposed to out-stations is certain to rise. The main railway workshops will experience an increase of maintenance work which will occupy the space, most of the plant, and most, if not all, of the men now employed on new building. With the natural wastage of manpower, a tapering-off of building work is possible without any great problems, whether human or of waste capacity, being raised. The adaption, therefore, of the small proportion of resources at present devoted to new construction, could be effected without undue difficulty, and, what is important, quickly. No legislation is required—it is only necessary for the Commission to adopt the policy and announce publicly that it has done so. Not only would the industry then be able to go ahead with its production plans, but potential customers overseas would have evidence of the faith placed by the nationalised British Railways in the products of British manufacturers.

The present transition from steam to diesel and electric motive power is as good a chance as is ever likely to present itself of making a change which would afford private industry the scope it needs. The overriding factor is that of the national interest, which requires that exports be promoted by all possible means. The locomotive manufacturers, who in view of their experience in the export field have a wide range of experience on which to draw, and should have the best possible opportunities of gaining much needed orders abroad which will help the general economy of the country. This is a case where, with no loss to itself, the British Transport Commission, by placing its orders for locomotives with the trade, could make a real contribution to the national cause. It should do so now.

### A Change of Emphasis

THE President of the French National Railways, Monsieur Louis Armand, is pre-eminent among railway technical officers. To his varied experience and skill in the field of motive power—steam, electric and diesel—he has, since his appointment as Director-General of the French National Railways, and more recently as Chairman of its Board of Management, added an equally well-merited reputation as an administrator. His country has lately used his deep scientific knowledge in wider spheres, notably that of atomic energy, but his name is probably associated by most people largely with the development of railway electrification on the 50-cycle a.c. system. In no sphere have his diplomatic ability and personal qualities proved more effective than in his presidency of the International Union of Railways (U.I.C.).

At a recent board meeting of that body in Paris, speaking on the theme "Problems of the Future," and particularly those facing the international railway organisations, he made the statement that transport problems were becoming increasingly economic problems, and notably in two ways: first, the relationship between transport problems and the general economy of the communities concerned; and, second, the combination of railways with other means of transport to achieve the co-ordination, or rather the "harmonisation" as he expressed it, of the various means of transport. He is reported to have continued by maintaining that railway managements had come to the end of a period which gave priority to the development of techniques; and that attention should now be directed mainly to the overall economic aspect of railway management, and to directing techniques and to using them as an instrument to give railway transport the place it deserved in the economy of the modern State. What Monsieur Armand had in mind presumably was the priority which has been given since the war by the French railways to the technical aspect.

This view is the more striking in that it is that of a railway engineer with long years of practical experience to look back upon and great achievements to his credit in the technical field in the reconstruction of the S.N.C.F., which, under his management, has achieved world records in high speeds, has set a high standard in productivity and good service to the public, and has been a pioneer in 50-cycle electrification, long-welded rails, and other technical developments.

### British Transport Commission Traffic Receipts

THE weather during the four weeks ended March 24, Period 3, was good, and the period was free from major industrial disputes. It is disquieting, therefore, that during the period British Railways coal and coke receipts should have exceeded those for the corresponding four weeks of last year by only 2 per cent, whilst merchandise and livestock receipts were only 9 per cent over the 1956 figure. The increases over last year's figure in respect of Period 2 were 10 per cent for coal class traffic, and some 19 per cent for merchandise and livestock. The only explanation for this discrepancy between Periods 2 and 3 seems to be that, with the improved situation as regards fuel oil known early in

	Four weeks to March 24		Incr. or decr.	Aggregate for twelve weeks		Incr. or decr.
	1957	1956		1957	1956	
<b>Passengers—</b>	£000	£000		£000	£000	
British Railways ..	9,371	8,078	+ 1,293	27,300	22,687	+ 4,613
London Transport:						
Roadways ..	1,835	1,687	+ 148	5,547	5,017	+ 530
Road Services ..	4,687	4,247	+ 440	13,904	12,204	+ 1,700
Provincial & Scottish buses ..	4,271	3,794	+ 477	12,817	10,879	+ 1,938
Ships ..	208	203	+ 5	608	605	+ 3
<b>Total Passengers ..</b>	<b>20,372</b>	<b>18,009</b>	<b>+ 2,363</b>	<b>60,176</b>	<b>51,392</b>	<b>+ 8,784</b>
<b>Freight, Parcels and   Mails—</b>						
British Railways:						
Merchandise & live- stock ..	9,208	8,419	+ 789	28,125	24,358	+ 3,767
Minerals ..	4,433	4,071	+ 362	13,185	12,106	+ 1,079
Coal & coke ..	10,579	10,345	+ 234	32,480	30,200	+ 2,280
Parcels, etc., by passenger train ..	3,899	3,517	+ 382	11,259	10,138	+ 1,121
Collection & deli- very etc. ..	1,128	1,002	+ 126	3,251	2,881	+ 370
<b>Total freight, British   Railways ..</b>	<b>29,247</b>	<b>27,354</b>	<b>+ 1,893</b>	<b>88,300</b>	<b>79,683</b>	<b>+ 8,617</b>
<b>Others* ..</b>	<b>4,291</b>	<b>4,451</b>	<b>- 160</b>	<b>12,403</b>	<b>12,750</b>	<b>- 347</b>
<b>Total freight, parcels   and mails ..</b>	<b>33,538</b>	<b>31,805</b>	<b>+ 1,733</b>	<b>100,703</b>	<b>92,433</b>	<b>+ 8,270</b>
<b>Total ..</b>	<b>53,910</b>	<b>49,814</b>	<b>+ 4,096</b>	<b>160,879</b>	<b>143,825</b>	<b>+ 17,054</b>

\* Inland waterways freight, road haulage, and ships

March, operators of road transport began to draw on reserves, with the result that a proportion of traffic began to be moved again by road. On the other hand, it is hard to see why coal and coke should have been so much affected. The freight shown under "others" is that conveyed by British Road Services and British Transport Commission ships and canals, but by far the greatest part of it is normally B.R.S. traffic; the fact that receipts for Period 3 were 3.6 per cent less than in the corresponding four weeks of last year, whilst receipts for the preceding period were 2 per cent down, may perhaps be explained in a more cautious policy as to fuel reserves pursued by British Road Services, which was prompt in curtailing its services when rationing was instituted.

British Railways passenger traffic receipts during Period 3 exceeded the 1956 figure by 16 per cent, compared with an increase of some 23 per cent over last year in respect of Period 2. It seems clear that a revival of private motoring was responsible. This would account also for London Transport railway and road service receipts for Period 3 showing increases of only 9 and 10 per cent respectively over the corresponding four weeks of last year, whereas, for Period 2, the increases were 11 per cent and 18 per cent.

#### PERCENTAGE VARIATION 1957 COMPARED WITH 1956

	Four weeks to March 24	Twelve weeks to March 24
<i>British Railways—</i>		
Passengers .. .. .	+16	+20.3
Parcels .. .. .	+10.8	+11.0
Merchandise & livestock .. .. .	+9.3	+15.4
Minerals .. .. .	+8.8	+8.9
Coal & coke .. .. .	+2.2	+7.5
C. & D. services .. .. .	+12.5	+12.8
<b>Total .. .. .</b>	<b>+8.9</b>	<b>+12.9</b>
<i>Ships (passengers) .. .. .</i>	<i>+2.4</i>	<i>+0.5</i>
<i>British Road Services, Inland Waterways, and Ships (cargo) .. .. .</i>	<i>-3.6</i>	<i>-2.7</i>
<i>Road Passenger Transport, Provincial &amp; Scottish .. .. .</i>	<i>+12.5</i>	<i>+17.8</i>
<i>London Transport—</i>		
Railways .. .. .	+8.7	+10.5
Road services .. .. .	+10.3	+13.9
<b>Total .. .. .</b>	<b>+9.9</b>	<b>+12.9</b>
<b>Aggregate .. .. .</b>	<b>+8.2</b>	<b>+11.8</b>

### Central Transport Consultative Committee

THE annual report of the Central Transport Consultative Committee for Great Britain for the year ended December 31, 1956, lives up to the standard of sturdy independence which has come to be characteristic of these reports. The Committee, under Lord Coleraine, its Chairman, has a mind of its own and is not deterred by argument where it is convinced that it has a good case. It is almost certainly, at least in part, the Committee's untiring advocacy of the small diesel vehicle for branch lines that has decided the British Transport Commission to order a number of light railbuses for use on such lines and on other lines in rural areas where stopping services are required. The Committee returns to the subject in its latest report and, having visited both the Republic of Ireland and Northern Ireland to see for itself what is being done there, it declares itself impressed by the manner in which the Irish railway managements have tackled the problem of modernising their undertakings. It found that travelling in diesel trains and railcars was "a surprisingly comfortable and pleasurable experience, especially in those cars which had an all-round view, and in the trains which had observation windows in front and rear." The Committee considers that the view afforded in such vehicles attracts traffic and expresses the hope that British diesel trains will be designed in a similar manner. It also showed interest in rail vehicles converted from road motorbuses.

The Committee notes with pleasure that the Commission has ordered some 20 railbuses, and hopes that these will be of lighter materials than are usually used in railway rolling stock. This is an important point, for

economy not only in running costs but also in first cost. The nearer the type of construction can approach to that of the comparable road vehicle the more economical it is likely to be, provided that the more delicate parts of the machinery can be insulated from rail shocks. As the report under consideration recognises, there are some cases in which, for safety reasons, a guard and a driver must be carried. This applies especially where the railbus operates over tracks used frequently by conventional trains and where the full signalling procedures are necessary. On some branch lines, however, as we have advocated many times, the safety measures could be reduced to a minimum, particularly where only one vehicle is being used at once. The railbuses could be operated on these lines by one man only. This seems to be the view of the Committee also, though it recognises that the braking and acceleration characteristics of road vehicles are much better than can be achieved with steel tyres on steel rails, and some allowance must be made for this in considering operating conditions.

The Committee is watching with particular interest the experimental use by the London Midland Region of single diesel cars, capable of being driven from either end, on the Bletchley-Banbury line. The line serves a particularly rural area where there are not even many villages of appreciable size. At Buckingham, the only intermediate town of note, the station is some distance from the centre of the town. Banbury and Bletchley, however, are both busy railway junctions. Even although the Commission feels that the type of car used is not entirely suitable and not enough of them are available to run a service of the frequency needed if the service is to cover its costs, valuable lessons are being learnt. The percentage increase in passenger traffic has been—at more than 400 per cent—spectacular. Two small unstaffed halts, tapping scattered populations, have been provided at intermediate points. Halts of this type, small and inexpensive, might well be provided, as the Committee advocates, on branch lines served by railbuses.

The aspect of the work of the Central Committee and of the Transport Users' Consultative Committees for the several areas of Great Britain which receives much publicity is the consideration of proposals for the closure or partial closure of branch lines. In 1956, the committees supported such proposals for 16 branch lines and also supported the withdrawal of 22 passenger train services and the closing of 55 stations. The minimum annual savings estimated by the Commission to result from the closure of branch lines during the year amount to £110,543, bringing the total of such savings since 1950 to £1,539,354. In the experience of the Committee, these figures are estimated conservatively and are usually considerably exceeded in practice. The number of applications by the Commission to close lines was less than usual, because it has been engaged in making a re-assessment of the whole of the railway undertaking and has thus tended to hold back applications in respect of particular lines until proposals for the railways as a whole were available. The Commission indicated early in 1956 that a great many applications were likely to come before the Committees—so many that the existing consultative committee structure might be unable to deal with them. However, the Commission decision, published in the White Paper of October last, to substitute diesel trains for uneconomic steam trains where possible, has resulted in a radical modification to the programme of closures and the number of applications is now likely to be well within the present capacity of the committees.

The Committee investigates major complaints of bad timekeeping by main-line trains, and it must be some cause for satisfaction that few delays are attributed to faulty planning. The most serious causes of delay, it considers, are the failure of rolling stock because of the accumulation of minor mishaps attributable to age—a cause which will be progressively reduced as new rolling stock comes into use; track re-laying speed restrictions; and the shortages of signalmen and shunters. The present condition of the track, the Committee recognises, is the



result not only of wartime arrears of maintenance but also of the need for large-scale reconstruction after a century of general wear. The improvement in time-keeping is most marked where electric and diesel trains are in use, and the report suggests, rightly, that a much higher standard will obtain when the railways are re-equipped with modern power units, rolling stock, and plant. Nevertheless, the Committee again emphasised to the British Transport Commission that realistic adjustments to timetables should be made where trains are persistently late, and also pointed out the psychological importance of explaining to the public when and why trains are delayed. The special facilities for carrying motorcars by rail are praised, as are the proposals for increasing the use of containers. Both these services, the Committee considers, should be extended and, in the case of container services, should be more widely advertised. It expresses particular interest in the White Paper

proposals for improving freight services. The report deals at some length with the withdrawal of the passenger train service between Hooton and West Kirby, pointing out that no change of motive power could have made the service economic. It also praises the case made out by complainants for improvements to the Uckfield, Heathfield and London train services but shows that improvements in present conditions would result in inconvenience and delay to other services. Diesel or electric traction, it considers, is the only real solution to such cases.

After examining a large number of objections to the proposed withdrawal of the British Railways steamship service between Southampton and Havre, the Central Committee agreed with the South Eastern Committee that the service should be continued. It believes that this may be one of the rare exceptions where a long-established service should not be tested solely on the basis of profitability when it so clearly fulfils a public need.

## LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

### Maintenance of Locomotives

April 2

SIR,—In your February 1 issue an article on 1956 railway operations showed that on December 2, British Railways had 2,917 locomotives out of a total stock of 18,186, or 16 per cent, under repair. That was the lowest percentage for any 12-weekly period of 1956, but No. 13 of *Transport Statistics* gave the number of unserviceable locomotives at December 30 as 2,590, or 14.2 per cent of total stock; of that number 802, or 4.4 per cent, were at workshops and 1,788, or 9.8 per cent, at motive power depots. The change in the December 30 figures is caused largely by a customary interruption to the flow of defective engines to workshops and depots owing to the exceptional working conditions towards the close of each year. As usual, the under repair percentage will be higher in the early part of 1957.

Meantime, in a letter printed on page 156 of the April issue of your associated journal, *Diesel Railway Traction*, the Public Relations Adviser, British Transport Commission, writes that "at the end of 1956, only 11.36 per cent of our stock of locomotives was under or awaiting repair (4.54 per cent in the main workshops and 6.82 per cent at motive power depots)." As the number of locomotives under or awaiting repair at depots is always more than twice the number at shops, these figures cannot be correct and should be amended at once.

Yours faithfully,

YOUR FEBRUARY CORRESPONDENT

Westminster, S.W.1

### Steam versus Diesel

April 2

SIR,—It is a great pity that your correspondent, in his editorial article in your February 1 issue, cannot review British Railways statistics without irrelevant information on what the Americans are doing. For reasons which remain a little vague, the U.S.A. railways have decided to eliminate the steam locomotive in favour of the diesel and to this end have invested astronomical sums of money in new power. That this has led to an improvement in operating figures is something we are asked to accept with an air of wonder—why, I can never make out.

With everything being spent on motive power, there has been insufficient left to buy freight cars, of which there are no longer enough to cope with the traffic offering, and a potentially disastrous rise in freight rates is being demanded. Considering the trifling effect on the overall cost of a railroad of the difference between two types of motive power, does your correspondent really feel that this is the sort of thing British Railways ought to emulate?

In Britain, although the extravagant claims continue to be made, two and two continue to add up to four. As far as one can gather, the facts about diesel power in this country are that the best machines available offer no worthwhile improvement in performance, maintenance, or running cost over a reasonably modern coal burner, while costing nearly three times as much to buy. Availability is a strong point certainly and the recently announced "Royal Scot" programme with two twin units doing an 800-mile round trip daily shows the diesel to best advantage. Yet it requires at least five diesel units (two twins and one spare) costing £475,000 to operate that service, while there remains no logical reason why it should not be done by the same number of steam locomotives costing £175,000.

I would leave it to your correspondent to produce a formula to cover the odd £100 a day burden which the diesels would be carrying on this account.

Yours faithfully,

L. IRVINE-BROWN

Hill House, Halton, Runcorn, Cheshire

### Locomotives or Multiple-Unit Sets?

March 29

SIR,—I was most interested to read Mr. John Rodgers' comment in today's issue on my recent letter, but I cannot follow his reasoning. He cannot agree that the bad riding is inherent in the motor bogies of multiple-unit stock (due, as I said, to the low centre of gravity and low-slung motors), and that a "higher centre of gravity and lower unsprung weight ought to be possible." I should greatly appreciate more precise information as to what Mr. Rodgers has in mind, especially as hitherto we have been discussing purely electric stock.

The high-speed diesel-electric Pullman expresses to be introduced on certain important links next year, embodying 1,000-h.p. engine compartments and fully-spring-borne motors in the motor bogies, seem to follow successful Continental practice, and are good news indeed, and I look forward with interest to a fuller description of the motor bogies in question in due course. It is true that the centre of gravity of the vehicle as a whole will be higher because of the presence of the heavy diesel engine above the floor, but whilst the c.g. of the motor bogies themselves will apparently remain low, due to the presence of the low-slung motors, at least the latter will be fully-spring-borne, and it will remain to be seen how these bogies will stand up to their very strenuous life on the rail.

Yours faithfully,

P. WEIL

49, The Drive, Hove 3, Sussex

## THE SCRAP HEAP

### Railway Classicists

(See the Scrap Heap of March 8)

Lord Ronaldshay, in his "Life of Lord Curzon," refers to "an enthusiastic admirer" of Curzon, whose Indian speeches, during his viceroyalty (1898-1905), he translated into Greek. "The translator," states Lord Ronaldshay, "was Mr. F. T. Richards, a remarkable man employed in the Agent's office of the Great Indian Peninsula Railway at Bombay, who devoted his leisure hours to Latin and Greek composition. He was an excellent scholar, who had read widely and minutely and who kept himself abreast of the best classical works of the day."

### Early Underground Line in Budapest

Although work seems to have been discontinued on the proposed Budapest deep-level tube, a recent visit by a correspondent confirmed that the older municipal underground railway beneath Stalin (formerly Andrássy) Street is in full operation. This two-mile line was constructed in 1895-96 as an alternative to a surface tramway, and was therefore built with stations at only 400-yd. intervals, the platforms being approached by short flights of steps. The double-track, standard gauge line is of steel-lined cut-and-cover construction from the Danube terminus at Vörösmarty-tér as far as the City Park, where it comes to the surface shortly before reaching its terminus. Left-hand running is in force—unlike the Hungarian State Railways. A remarkable feature is the very limited headroom of 2.75 metres (9 ft. 0½ in.), which, with the use of overhead current collection, necessitates the unusual design of vehicle shown in the illustration. Current is taken at 550 V. d.c. by twin bow collectors from an overhead conductor wire, replaced in the tunnel by an inverted contact rail, because of the limited clearance. Cars run singly at

intervals of about 75 sec., under automatic two-aspect colour-light signals. The journey time is about 7 min.

### The Midland Reaches London

A notable centenary of the present year is that of the extension of the Midland Railway from Leicester, through Bedford, to a junction with the Great Northern Railway at Hitchin in 1857—opened for goods traffic on April 15, and for passengers on May 8. Previously the Midland had sent its traffic to London via Rugby and the London & North Western, but the line to Hitchin, and running powers over the G.N.R., brought its trains to Kings Cross. This arrangement continued until the extension of the Midland main line from Bedford to St. Pancras in 1868; the 16 miles from Bedford to Hitchin have long since become a byway, reduced to a single track. The distance from Kings Cross to Bedford via Hitchin (48½ miles) is 1½ miles less than that from St. Pancras.

### Early Tube Railway Locomotive

Equipment from City & South London Railway No. 36, illustrated in the Scrap Heap of November 16, 1956, has been presented by the British Transport Commission to Crompton Parkinson Limited, for inclusion in the firm's historical collection. One of 36 similar locomotives, built by the former Crompton & Company in 1897-1901, No. 36, was commissioned in 1900, 10 years after the railway had been opened. All the Crompton locomotives were fitted with two gearless motors and were capable of hauling a four-car train even if one motor was out of commission.

When the C.S.L.R. was converted to multiple-unit traction in 1926, No. 36 was placed on display at Moorgate Station, where it was badly damaged when the station was bombed during

the war. As a complete City & South London locomotive is on view at the South Kensington Science Museum, it was decided to offer No. 36 to Crompton Parkinson Limited, as successors to the original makers. The difficulties and cost of removing it as a whole would have been very considerable, and Crompton Parkinson decided to take such parts of it as they considered to be of particular interest, namely the two motors with wheels and axles, a resistor and the two original name-plates. These parts, it is understood, will be renovated where necessary for exhibition purposes and will be kept, for the reference of engineers and students, in the company's historic collection at its Chelmsford Works.

### Exceptional Loads

A portly passenger from Hove,  
A genial, out-sized sort of cove,  
Fed up with travelling en masse,  
Sought elbow room in the first class.  
What extra comfort was his share  
For shelling out the higher fare  
Is still a matter for debate,  
On which we won't expatiate.

Now persons who are adipose  
Are very seldom lachrymose;  
They can be sure of sympathy  
From semi-portly chaps, like me,  
Who, too, at sundry times, have felt  
Uneasiness around the belt.  
They likewise claim, with proper pride,  
They have no need to put on side.

When travelling by train, no doubt,  
It's hard to get them in and out.  
Once seated, though, "J'y suis, j'y  
reste."

For surely gravity knows best.  
Great Caesar stipulated that  
The men around him should be fat.  
Hove passengers say "Quantum suff."  
One at a time is quite enough!

A. B.



One of the original cars, dating from 1895-96 and rebuilt in 1933, near Budapest City Park terminus



Entrance to underground section, showing restricted headroom and inverted contact rail

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### EAST AFRICA

#### Railway Expenditure Approved

At recent meetings of the Transport Advisory Council and the Railways and Harbours Committees approval was given for the expenditure of some £2½ million on railway and harbour works. The principal works authorised on the railway side were the fifth and final stage of the renewal of the track between Mombasa and Nairobi in heavier rail at a cost of £1,142,000 and the purchase of 32 passenger coaches, four first, 10 second and 18 third class, at a cost of £571,000. These are required partly to replace old coaches and partly to provide additional facilities for the growing passenger traffic. In the proposed orders for these coaches the East African Railways & Harbours are considering the possibilities of introducing first class coaches of the "Roomette" type with separate accommodation for each passenger and vestibule-type second class coaches which would have reclining airchair seats for up to 50 passengers.

### PAKISTAN

#### Safety Week

The North Western Railway recently observed a "safety week," so as to focus the attention of the staff on the importance of safety and to prevent them from becoming complacent. It was revealed that in 1954-55 the number of people killed in accidents con-

nected with the N.W.R. was 227. An analysis indicates that most of these deaths could have been avoided if a little care had been exercised. The number of those who received injuries of all descriptions from a minor scratch to grievous injury was 2,242 of whom 1,818 were railwaymen. Considerable publicity was given to safe methods of working and to the common breaches in the safety rules.

#### More Diesel Shunters for E.B.R.

The Eastern Bengal Railway is now operating 51 diesel-electric locomotives, including 11 Baume & Mercier metre-gauge 400-h.p. shunters for use at Chittagong, where the port is very busy dealing with food grain traffic.

### CANADA

#### New P.G.E. Service Inaugurated

The Pacific Great Eastern Railway southern terminus was opened recently at North Vancouver by the Premier of British Columbia, Mr. W. A. C. Bennett. The occasion synchronised with the inauguration of the new "Cariboo Dayliner" service from North Vancouver to Prince George. The train leaves North Vancouver in the morning and reaches Prince George the same night, reducing by nearly 10 hr. the time taken by the existing train service. The new service uses individually powered diesel cars with a top speed of 82 m.p.h., and introduces several innovations, of which one is the provision of complimentary

meals similar to those on airliners, while reclining chairs and modern interior decorations further carry out the airliner atmosphere. The "Cariboo Dayliner" will operate a tri-weekly north- and south-bound timetable supplementing the tri-weekly service now being operated by the regular trains, which will continue to supply sleeping-car accommodation.

### ALGERIA

#### Extension Southwards

Work has started on a standard-gauge line which next year will enable oil to be moved by tank wagon 660 miles to the Mediterranean coast from the wells of Hassi Messaoud in the Sahara. The railway will run 135 miles from Biskra to Touggourt, and will supplement the present metre-gauge line between those points. Tanker lorries will link the railhead with the Hassi Messaoud wells over 155 miles of road while a pipeline is being built. The oil will be conveyed from Biskra to the port of Philippeville over the Algerian Railways existing standard-gauge line.

### NETHERLANDS

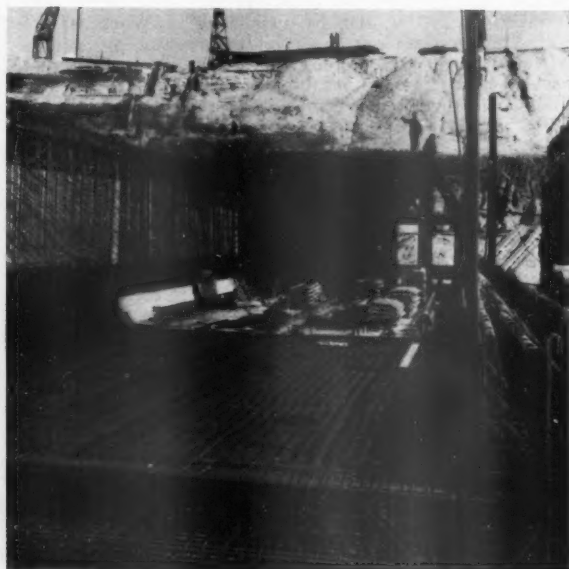
#### North Sea Canal Tunnel

Work upon the twin rail and road tunnels under the North Sea Canal at Velsen is proceeding well and is ex-



[Photo]

[Articpress, Haarlem]



[Photo]

[Pieterse, Santpoort]

Work in progress on the tunnels for the Haarlem-Alkmaar line of the Netherlands Railways and road under the North Sea Canal, showing (left) north end, with railway tunnel and (in background) slope of road approach, and (right) reinforcing floor of railway tunnel, and shuttering for concrete (See our issue of November 6, 1953)



pected to be completed by the end of 1957. The railway tunnel is approached by gradients of about 1 in 62 and is designed for double-line traffic. Its dimensions are: length 6,666 ft., width 30 ft. and height above rail level 18 ft. The overall length of the undertaking is nearly two miles.

## FRANCE

### Loading Gauge Improvements

Certain lines in the Western Region of the French National Railways (Paris-Havre, Mantes-Cherbourg, Malaunay-Dieppe, and some suburban lines from Paris St. Lazare) at present can take traffic within the S.N.C.F. minimum loading gauge only. This is narrower than the normal international loading gauge adopted by many Western European countries. Work is being carried out on the alteration of track and structures to conform to the wider gauge, including particularly the setting back of tunnel walls.

The cross-sections of the tunnels have been determined accurately by using the Castan apparatus, a development of which was described in our issue of

March 1, 1957, and have shown that in some cases it is easier to set back the wall of the tunnel by not more than 8 in., notably along a strip some 5 ft. wide and 10 ft. above track level, than to lower the track level throughout. This is done by replacing two, three, or four layers of bricks by prefabricated reinforced concrete voussoirs so fixed as to become integrated with the brick vaulting.

### "Car-Sleeper" Express Heavily Booked

Because of the very heavy demand for accommodation at the beginning of June in the new Boulogne-Lyons "Car-Sleeper" express, there will be an extra departure from Boulogne on May 31 and from Lyons on June 1.

### Level Crossing Replacement

The level crossing at Arveyres, near Libourne, by which Route-Nationale 89 used to cross the Paris-Bordeaux mainline, has been replaced by an overline bridge which necessitated a long approach embankment on each side of the railway. To maintain the same alignment of the road, a temporary crossing, served by temporary approach roads, was constructed for use whilst

the bridge was being built adjacent to one end of Arveyres station. For pedestrians, steps were constructed from the station level to the embankment, and a U-shaped road provided similar facilities for motor vehicles.

## DENMARK

### Gedser-Warnemünde Ferry Service

Since the war several attempts have been made to revive the passenger traffic by the Gedser-Warnemünde route, but without success, probably because of the trouble and delay in obtaining visas. Now the East German authorities have opened an office in Warnemünde, where transit visas to West Berlin or places beyond Eastern Germany may be obtained.

The German Federal and Danish State Railways have introduced a daily service between Copenhagen and Berlin. The train leaves Copenhagen at 6 p.m. and reaches Berlin Ostbahnhof at 6.12 a.m. In the reverse direction Berlin is left at 11.11 p.m. and Copenhagen reached at 12.20 p.m. next day.

At the same time the fares have been considerably reduced.

## Publications Received

*Narrow Gauge Album.* By P. B. Whitehouse. London: Ian Allan Limited, Craven House, Hampton Court, Surrey. 9½ in. x 7½ in. 142 pp. Illustrated. Price 25s.—The word "album" suggests photographs, and in these this book is particularly rich. Even if they were not accompanied by a text which strikes a happy medium between description and anecdote, the book would be valuable to all who regret the passing of so many light railways. There must always be a nostalgic air about railways which have closed, but some of these lines, such as the Isle of Man, the Snowdon, the Talylyn, and the Festiniog are still very much alive. Useful maps are included as endpapers; there is a bibliography, and a table giving features of railways mentioned in the text.

*Universal Decimal Classification.*—The British Standards Institution has issued B.S. 1,000 A-1957, a completely revised edition of the abridged schedules published in 1948. It presents several important new features which should commend themselves to library, and other classifiers who depend on B.S. 1,000 A as the only complete English edition of the U.D.C. at present available; coloured dividers are provided for quick reference. Preceding the general introduction, there is a note on the Dewey D.C. and U.D.C. explaining the resemblances and differences between these related systems. The general introduction has been recast as a concise guide for the less experienced classifiers. Equally important is the freshly compiled alphabetical subject index which now runs

into well over 20,000 entries, as against some 2,000, in the 1948 edition. In both main and auxiliary tables, the terminology has been extensively revised providing the essential background for specialists to use in conjunction with any appropriate sections of the full edition already published as B.S. 1,000, or available in French and/or German. Copies may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1. Price £2 2s. bound, and £1 15s. unbound.

*British Transport Film Library Catalogue.*—This comprehensive catalogue of films and filmstrips available for free loan, issued by British Transport Films, 25, Savile Row, London, W.1, will surprise most people by the variety and number of subjects listed. Besides productions of British Transport Films, there is a number of films and filmstrips produced in the past in connection with transport in Britain, and there are Commonwealth and foreign films of special interest. From this catalogue, educational authorities, clubs, societies, institutes, industrial and commercial associations, and so on can pick programmes of pictorial, technical, or educational interest. In some cases, projection equipment and projectionists can be made available, and lecture notes are provided with filmstrips. The catalogue costs 2s. 6d.

*Industrial Electronic Equipment.*—A survey of the efforts of the manufacturer, over the past 10 years, to supply industry with electronic control equipment is made by an illustrated publication, *Industrial Electronic Equipment*,

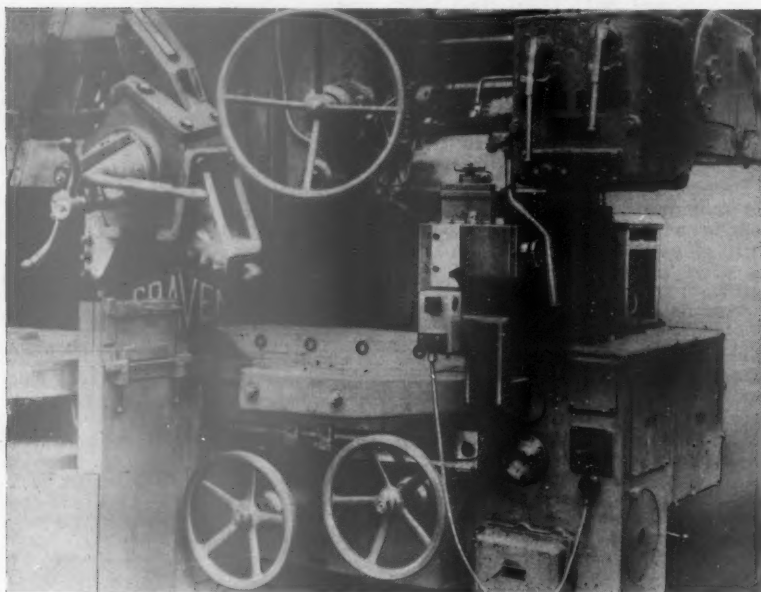
by Lancashire Dynamo Electrical Products Limited, Rugeley, Staffs. In this period, more than 2,000 different types of equipment have been designed and produced, some 500 types being currently available. Mention is also made of specially designed equipment which the company has produced to meet specific requirements. Copies may be obtained by application to the company.

*Gravity at Work*—Details of the gravity diecasting process are given in an illustrated booklet issued by Fry's Diecastings Limited, Prince George's Road, Merton Abbey, London, S.W.19. The company has also issued another booklet, "Magnesium Alloy Pressure Diecasting," relating to the applications of such castings. Both these publications discuss production methods, design and properties of these two forms of casting and copies may be obtained from the firm.

*Firth of Clyde and Loch Lomond Sailing Excursions.*—The Scottish Region, Clyde Shipping Services, has published an advance programme of pleasure sailings, excursions and tours which are planned for the summer season, commencing June 1, 1957, in the Firth of Clyde and Loch Lomond areas. Details given include single and season ticket fares, sailing days and times for day excursions, afternoon, and Sunday cruises. On two routes, Gourrock-Dunoon and Wemyss Bay-Rothesay, motorcar ferry services are provided. At a later date a booklet will be issued giving more detailed information including connecting train services and the full excursion programme.

## Semi-Automatic Boring and Turning Machine

*Profile copying for machining disc-type railway rolling stock wheels*



*Semi-automatic wheel boring and turning-mill, showing the right-hand head profile attachment*

**R**ECENTLY completed by Craven Bros. (Manchester) Ltd. is the first of 10 turning and boring mills, ordered by Taylor Bros. & Co. Ltd., Trafford Park, Manchester, for the machining of railway wheels for home and railways overseas. The machine is almost fully automatic and has been specially developed for the rapid machining with cemented-carbide cutting tools, of solid disc-type railway wheels from 24 in. to 43½ in. dia. on tread. The operations performed at one setting of the wheel comprise rough boss boring, complete rough and finish copy-turning of tread and flange profile, boss face and diameter turning and blending the wheel web, and rim facing and blending the inside dia. to the web.

### Single Column Construction

The machine is of very heavy, built-up single column construction, with a fixed cross-slide carrying an independently-driven vertical boring head for wheel boss boring, and a separate saddle with a five-sided tool turret equipped for facing and blending operations. Both right and left-handed side turning heads are provided on the upright, each being equipped with the Craven patent, electrically-operated profile copying equipment. The right-hand side-head is used for rough profiling cuts on the wheel tread and flange, using one or two tools according to the condition of the forging, and the amount of metal to be removed, while the left-hand head is used only for the finish profiling cut, with a single round-nosed or button tool which is timed

to start automatically, and to follow closely in the wake of the roughing cut.

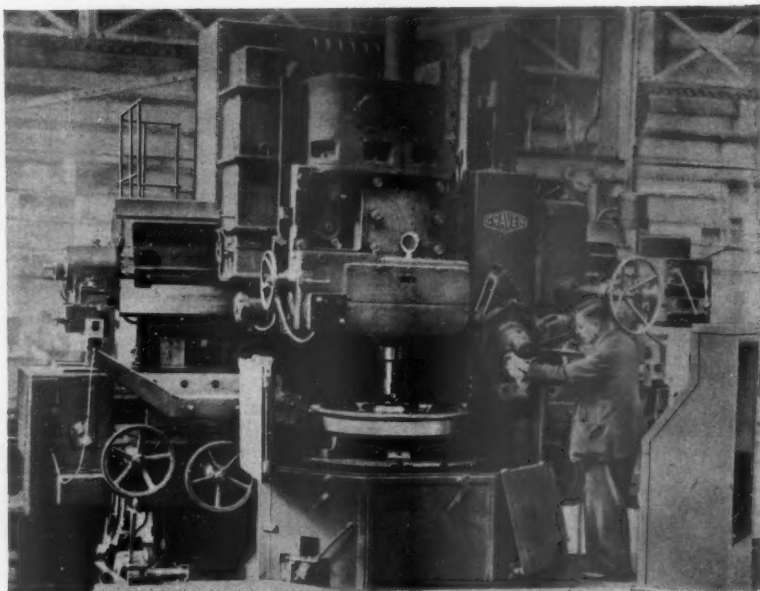
As far as possible, boring, rim facing and machining the inside dia. operations are performed while profiling is in progress, the only exception being boss facing, boss turning and the machining of the web, for which a higher work speed is necessary to maintain a suit-

able cutting speed on the smaller dia., this latter condition is obtained automatically as the turret slide advances beyond a predetermined dia. after completion of the tread profile and rim face. The worktable or chuck is 4 ft. dia. secured to a large dia. hollow, steel spindle running in British Timken tapered roller bearings.

Three concentrically-operated jaws, each with independent adjustment for initial setting purposes, are provided which grip internally the wheel rim. The jaws are operated simultaneously by a single hydraulic cylinder situated beneath the machine bed, and the vertical motion of a single central bar; rack teeth on the bar engage pinions machined integral with the three jaw-actuating screws. Hydraulic power for the gripping and release movement is supplied by means of a continuously-running, motor-driven main pump unit controlled by a lever on the front of the bed.

After initial clamping, however, the main oil supply is by-passed to an outlet by a further movement of the lever, leaving a small auxiliary pump to maintain the required gripping pressure of the jaws. Any loss of pressure is immediately indicated by the extinguishing of a pilot light on the control desk; electrical interlocking prevents the table from starting until the jaws are securely gripping the wheel.

The main drive to the table is by a 75-h.p. variable speed motor with a 4.4 to 1 speed ratio, mounted on a bed-plate at the rear of the machine, through vee-belts; bevel gears in the bed, and a



*Machine under test, showing the tooling set-up, and completed disc wheel*

final spur pinion reduction gearing to a large gear ring attached to the table. The drive includes a two-speed gear change to provide alternative table speed ranges of 16 to 72 r.p.m. and 10 to 44 r.p.m.; the lower speeds are required mainly for dealing with particularly hard forgings or for wheels of larger dia. Control of the motor is by push-button switches, but a spring-loaded friction clutch is embodied in the driving pulley as an overload slipping device.

The boring head on the left-hand of the cross-slide is a self-contained unit fitted with a  $4\frac{1}{2}$  in. dia. vertical spindle rotating in anti-friction bearings in a large sleeve member of octagonal section. The latter is suitably balanced, and has 14 in. vertical travel for hand adjustment, power feed, and quick power traverse. The spindle has a spigot for fitting the boring head, usually of the two tool type, and is driven by a  $12\frac{1}{2}$ -h.p. variable speed motor, through a worm reduction gear. It rotates in an opposite direction to that of the table at speeds varying from 50 to 150 r.p.m.

Vertical feed is at the rate of 0.016 in. per revolution, and is obtained from the spindle drive, while the quick power traverse is by separate motor. In operation, the boring spindle is automatically controlled through a complete cycle of movements by switch actuating dogs mounted on a dial at the front of the head. Once the cycle has been started by the appropriate push-button, the cutter is brought to within a short distance of the workpiece by quick traverse, rotation of the spindle is automatically started, and the cutter then proceeds through the boss at normal

cutting feed rate without further attention.

On completion of the traverse, the spindle is automatically quick traversed back to its non-working position where spindle rotation is stopped; quick traverse can be applied in the upwards direction while the feed is engaged, providing a safety measure in the event of tool breakage. A separate quick traverse motor is used to move the boring head horizontally into its central working position as indicated by a setting bar, or withdraw it to the extreme left-hand position on completion of the boring operation, so that the right-hand saddle and turret can be advanced to machine the face of the boss.

#### Reversible Feeds

Equipped with a balanced, non-swivelling type vertical slide, on which the tool turret is mounted, the right-hand saddle on the cross-slide is provided with reversible horizontal and vertical feeds varying from 0.5 to 4 in. per min. by independent variable-speed motor; hand adjustment is also provided. A further motor is fitted for quick power traverse in either direction; safety slipping clutches are also embodied. Three tools are mounted in special brackets for facing and blending operation, the latter being carried out to gauges and dial readings.

Chain connection between the turret saddle and the main motor speed regulating rheostat enables the table speed to be increased automatically as the cutting tool advances toward the centre of the workpiece maintaining a close approximation to a constant cutting speed. Adjustment of the setting

of an intermediate ratchet-type clutch tappet determines the dia. at which the automatic speed increase begins to function, while a separate friction clutch, in conjunction with slip change wheels, enables the dia. of cutting to be related as required to cutting speed.

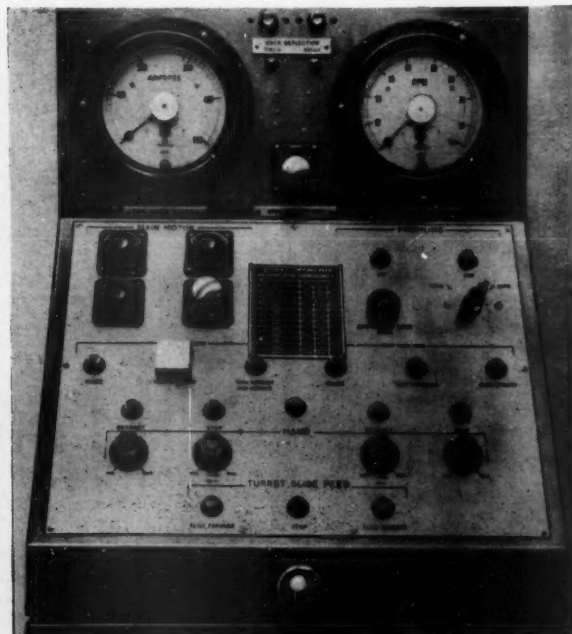
Used for rough profiling of the tread and flange form, the right-hand side head is balanced by a weight in the upright, and has screw-operated vertical traverse. It is fitted with a rectangular section horizontal ram, sliding in square section slideways, arranged at a slight backward angle to facilitate early entrance of the turret head for rim facing. The ram has screw-operated horizontal traverse, hand adjusting is provided in both horizontal and vertical traverse, together with quick power traverse in the vertical direction by means of independent motor drive.

#### Profile Copying

Feed traverse in both directions is obtained by separate variable speed d.c. motors which may be operated by push-buttons for setting purposes, but are automatically controlled in combination with each other for profile copying by a sensitive stylus unit in contact with a sheet-metal template. The stylus is carried on a tracer arm attached to the ram, and the template is mounted on a convenient arrangement of compound slides attached to the cross-slide, with micrometer dials for fine adjustments for cutting dia. and profile location; major adjustment for different wheel dia. is by varying the position of the tracer arm on the ram. Profiling is in the downwards (Continued on page 422)



Regulating rheostat for determining relation between cutting dia. and work speed increase and range



Control cabinet, showing layout of electrical equipment; boring is controlled from separate station



## Air Terminal Over L.T.E. Running Lines

*Steel and concrete platform 58,500 sq. ft. in extent built on columns over part of Cromwell Triangle*

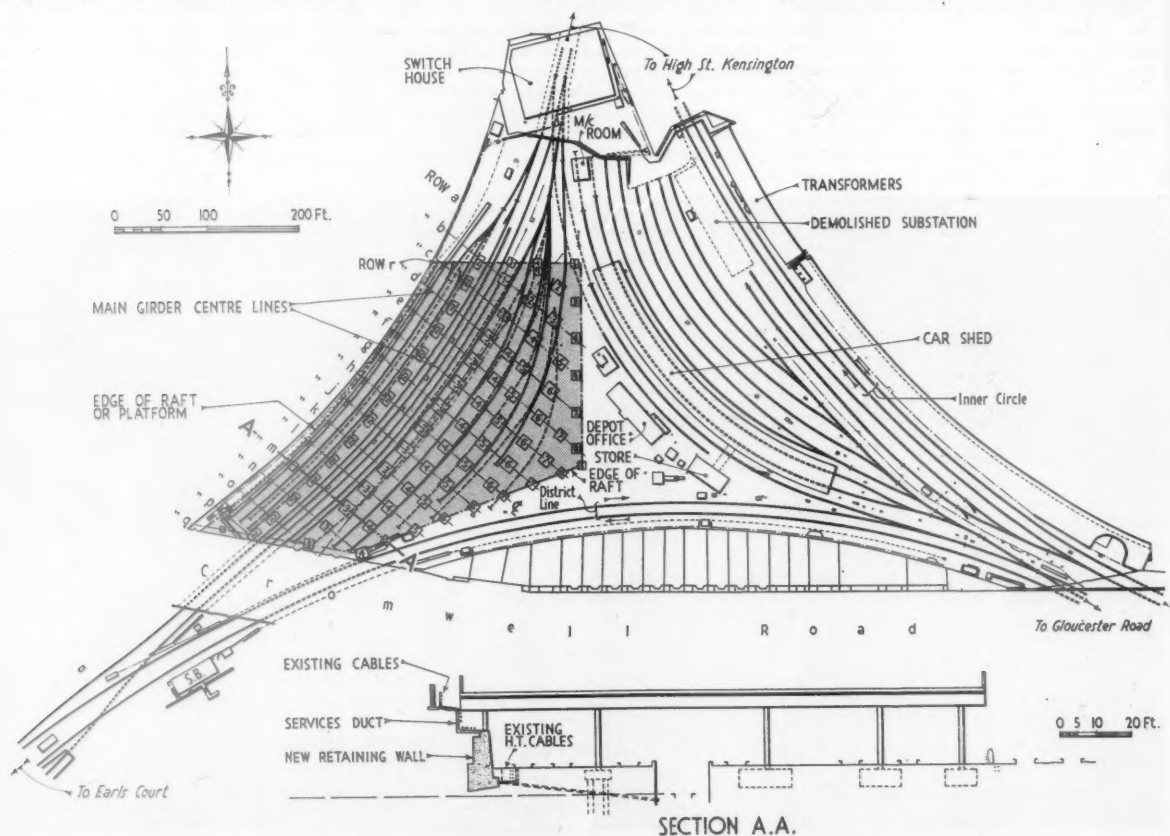
FOR reasons explained in an editorial note on another page, London Transport engineers have designed and supervised the construction by contract of a steel and concrete "platform" for supporting London's temporary new Central Air Terminal. As will be seen from the full and dotted lines on the plan, the platform covers an area occupied by two running tracks connecting Kensington High Street with Earls Court, with two sidings to the west and five others to the east of them. The Earls Court to High Street track is at ground level, but the one from High Street to Earls Court is here running down between walls to cross under the South Kensington—Earls Court leg of the triangle. The two groups of sidings, taking off from the running roads, were all taken out of use for the duration of the works but are being restored, some of them with slightly altered alignments to suit the siting of the supporting columns of the new structure. It is noteworthy that the two running tracks referred to above were maintained in use throughout the work except on Sundays and during



*View from Cromwell Road of site before work began on the platform but with retaining wall and service duct above it nearly complete. Earls Court—High Street running lines left centre*

short night occupations by the Engineer. The platform is designed for standard Highway loading, or alternatively for

any arrangement of buildings up to three normal stories in height. The columns and main girders are designed



*Site plan of platform for London Central Air Terminal relative to the Cromwell Triangle Underground tracks. Note the siting of the rows of columns (shown on rectangular blocks) and the main girders*



Photo]

[Dorman Long &amp; Co. Ltd.

View of platform raft from roof of nearby hotel, showing steelwork completed up to row "h." Reinforcement being fixed (right centre) and in situ concrete (right foreground)

to utilise the full plastic moments of the sections with a load factor of 1.75. Mild steel was used throughout, the flange plates being N.D.I. steel. The pre-assembled work was of all-welded fabrication and site connections were made with high-strength bolts.

#### Platform and Supporting Columns

The platform, with an area of slightly over  $1\frac{1}{2}$  acres, is supported by about 80 columns. They consist of welded steel box-sections, and except in the immediate vicinity of the running tracks are carried on mass-concrete foundations. As the lengths of span in the superstructure necessarily vary, both the dimensions of the columns and the thickness of their plates and also the sizes of the foundation blocks differ according to the loadings. The columns near the running lines rest on reinforced-concrete capping slabs supported by groups of six bored piles driven to a depth of about 30 ft.; most of the piles are 18 in. but a few are 24 in. in dia.

All except 15 of the steel columns are approximately 17 ft. in height; the remaining 15, which take their bearing on top of a retaining wall, are only some 6 ft. in height. Each consists of four vertical plates welded together in rectangular section, the heaviest having two 12-in.  $\times$   $1\frac{1}{2}$ -in. and two 10-in.  $\times$  2-in. plates. The columns are arranged in parallel rows 30 ft. apart, but the spacings in each row vary from 17 ft. 7 in. to 59 ft. 8 in. to suit the alignments of the tracks spanned.

#### Main and Secondary Girders

Each row supports a continuous main girder having a web 42 in. deep and from  $\frac{1}{2}$  in. to  $1\frac{1}{8}$  in. thick, according to the shear force. The flange main plates are 18 in.  $\times$  from  $\frac{1}{2}$  in. to 2 in., with additional plates 16 in.  $\times$  up to  $1\frac{1}{2}$  in., making a maximum thickness of  $3\frac{1}{2}$  in. Where a change in section occurs in the flange or the web, this is made by butt-welding. The longest of these con-

tinuous girders measures 239 ft. Jointing in these long lengths is provided by splices secured with high-strength bolts. The thickness of the flanges at some splice joints is nearly  $6\frac{1}{2}$  in.

The secondary or cross girders are 30 ft. long and spaced 15 ft. apart. To suit the requirements of the firms supplying them they are of two types, roughly half being 24-in.  $\times$  12-in. broad-flange beams, and half 24-in.  $\times$  7 $\frac{1}{2}$ -in. R.S.J's with 12-in.  $\times$   $\frac{3}{4}$ -in. top plates and 12-in.  $\times$   $\frac{3}{4}$ -in. bottom plates.

#### The Deck and its Drainage

The reinforced concrete decking is carried on the cross girders, which are provided with perforated vertical fins along the centre-lines of their top flanges, through which shear connectors are threaded. The concrete deck is designed to act compositely with the top flanges of the cross girders and continuously at right angles to them. The deck is 11-in. thick and was con-

structed successively in two halves. The lower half, consisting of pre-cast reinforced slabs, was first erected and then acted as shuttering for the placing of the upper half, its concrete being poured in situ over the slabs. Each slab weighs about 1 ton.

On the areas which will be open roadway, the top surface of the concrete is raised by up to 4 in. to give falls for drainage. On this surface is a waterproof layer of bituminous emulsion protected by a  $1\frac{1}{2}$ -in. thickness of cement screed, and over this again is a 3-in. carpet of rolled asphalt in two layers.

For carrying off surface drainage special pre-cast concrete slabs, strengthened with R.S.J's, are used in the lower half of the deck, arranged in a regular pattern with suitable holes cast in them for road gullies or for service pipes and cables to buildings. When these holes are not required, the in situ concrete is carried over them, but they can be drilled out again if required at a later stage. This drainage system leads westwards into a collecting drain behind the retaining wall to be described later.

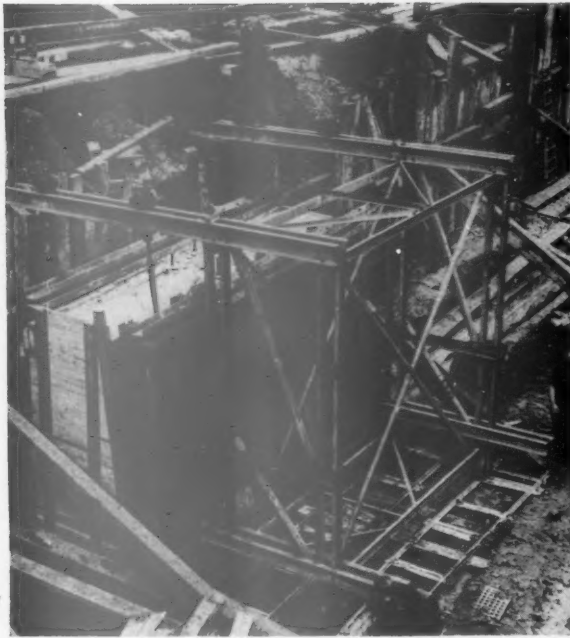
#### Steel and Deck Slab Erection

The steelwork was erected with a 15-ton electric crane having a 120-ft. jib and running on two of the sidings suitably realigned. For handling the pre-cast slabs a smaller caterpillar-mounted crane was used on the deck. Also, for placing them in position, a small gantry with flanged wheels running on the fins of the cross beams was specially made for the purpose. All the steelwork was delivered by rail and the decking materials came in by road via the adjacent Cromwell Road at deck level.

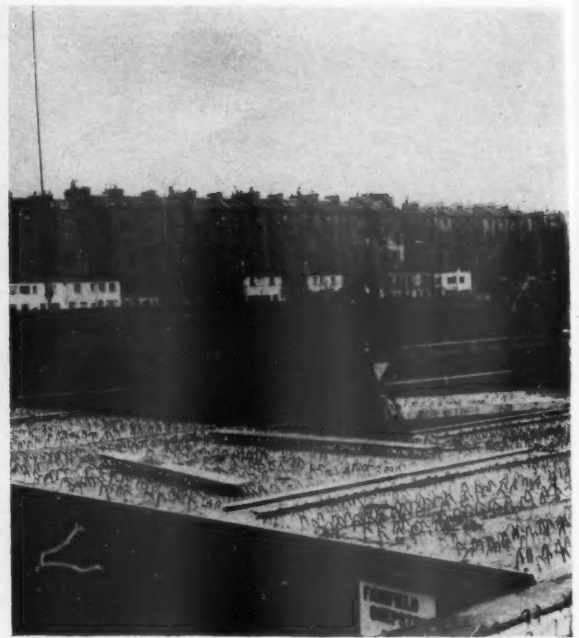
Along the full length of the western perimeter of the decked area a concrete retaining wall had to be constructed as shown in section on the diagram. A handy and light form of portable steel shuttering was devised for this work by the contractor, consisting of a rail-mounted steel frame with cantilevered



View of platform from direction towards High Street, Kensington, showing steelwork complete. High Street-Earls Court lines on extreme right



*Portable light gantry for placing steel-faced shutters, erected but without counter weights on outriggers. It is being used for concreting a bay of the retaining wall*



*Special gantry-carriage for transporting pre-cast concrete units running on shear connector fins on top of secondary beams. View eastward towards Gloucester Road*

top members stretching over the top of the wall to be built. The steel back shutter plate was lowered into place from the far end of the cantilever frame, and the front plate from the near end; the latter was then jacked horizontally to the correct batter from the verticals of the frame. Behind the top of the retaining wall is a large continuous duct for accommodating various service mains as well as the drain mentioned above for disposing of the surface water and domestic drainage from the platform.

Before calculations and design details could begin, design loading was agreed

on June 16, 1955, but the sub-contract for the steelwork was let to Dorman Long & Co. Ltd., on December 7 of that year. This included the co-ordinated supply of the necessary material and all erection at site. The main contract for the work was let to William Old Limited on February 4, 1956. To expedite the steelwork supply, fabrication of the columns was undertaken by the Tees Side Bridge & Engineering Co. Ltd., and that of the girderwork jointly by the Butterley Co. Ltd. and the Fairfield Shipbuilding & Engineering Co. Ltd. Hence the two designs of cross-girder mentioned above.

The first delivery of steel at site was not until October 14, 1956, yet the erection of the whole 1,080 tons was completed by December 24. The concrete decking followed closely behind the steel erection, and the site is due to be handed over to Air Terminals Limited early in April. Despite the different suppliers and the awkward angles of many of the joints, only two very minor adjustments of the fabricated steel were required on site.

The work was carried out under the general direction of Mr. C. E. Dunton, Chief Civil Engineer, London Transport.

### **Semi-Automatic Boring and Turning Machine**

*(Concluded from page 419)*

direction and from the inner face of the flange to the outer chamfer on the tread, after completion the cutter is automatically withdrawn to the non-working position and brought to rest.

The left-hand side head is opposite handed but otherwise very similar to the right-hand head, but the ram is fitted with a single type tool holder for the finish profile cut only, the template being arranged accordingly. Overall feed of both side heads automatically increases on completion of the flanged portion of the wheel where the heaviest cutting conditions are encountered. Rapid response to the stylus is obtained from the two feed motors by a carefully-developed electrical equipment. Speed variation when approaching major changes of contour is normally

controlled automatically, but hand adjustment is also included for use when dealing with hard or uneven forgings, which in many cases are much more difficult to machine.

#### **Fast Approach**

The profiling motion on the right-hand head is started by push-button for fast approach of the tool to the work, and the stylus to template. At a suitable point of approach, automatic operation of a further switch allows the advance to continue at copying speed until the stylus is in actual contact with the template, and from this point profiling is automatic. A feature of control is the provision of a separate control button which enables the tool to be withdrawn momentarily from the wheel at copying speed for inspection, and then to return and resume cutting without loss of contour. A further control for use in emer-

gencies withdraws the tool at high speed clear of the workpiece. Quick traverse of the side-head is by separate motor at the foot of the upright. In the event of over-deflection of the stylus, a warning light is shown on the control panel and copying automatically stops.

Similar controls are provided for the left-hand head, but when on production, its whole cycle of operations is timed to start automatically, and to proceed in correct relationship with that of the right-hand head. Electrical controls for both side heads and main motor, as well as a duplicate set of controls for the turret saddle feed motion are embodied in a portable desk-type control panel, together with an ammeter and tachometer to indicate current consumption, and main table speeds. The boring head has its own control station and ammeter mounted on the front of its spindle housing.



# ELECTRIC RAILWAY TRACTION SECTION

## Rectifier Locomotives

TWO complementary papers presented to the Institution of Electrical Engineers on March 14 provided a review of practice in rectifier locomotive development, with the supporting theoretical background, which is of special interest in the light of the orders for this form of motive power announced by the British Transport Commission on March 29 (see our April 5 issue). Under the title "Electrical Equipment for Rectifier Locomotives," Messrs. H. B. Calverley, E. A. K. Jarvis, and E. Williams, all of the English Electric Co. Ltd., dealt with the principal features of circuit and apparatus design. This was the most detailed account which has yet been published of current British thinking in this sphere, and in view of the several years' experience gained by the authors' company with rectifier motive power on the Lancaster-Morecambe-Heysham line, the trends shown in the paper may be considered indicative of the basis of development to meet the wider requirements of the modernisation plan.

Methods of rectifier connection were discussed in the paper and a three-wire bridge system was shown in which, although motors are grouped two in series, with a consequent higher rectifier voltage and lower mean apparent power of the transformer for a given d.c. output, the motor voltages are as well stabilised as if they were connected in parallel. Tap-changing systems for motor voltage control were also reviewed, and attention was drawn to the possibilities of stepless control in allowing higher starting tractive effort for a given adhesive weight. It was suggested that a combination of grid control in the rectifiers with tap changing might be used, the former being applied up to about 20 or 30 per cent of maximum anode voltage. The usual reasons for avoiding the use of grid control such as worsening of power factor and increase of harmonics, would be of little account with this scheme because the power being drawn from the line would be small at starting, and on any normal running notch the grid control would be removed.

In any transformer tap-changing system, the prevention of short circuits across sections of the winding makes rigorous interlocking necessary. The authors enumerated the advantages of a combined electrical and mechanical system, using mechanically-interlocked selector contacts but electro-pneumatic load switches. With reference to the ignitron and excitron types of single-anode, mercury-arc rectifiers, an output for locomotive applications of between 600 and 900 V., with mean continuous ratings between 1,100 and 750 amp., was suggested, the rectifiers being water-cooled. While germanium rectifiers dispense with preheating (required in mercury-arc types to prevent voltage surges caused by application of load at too low a temperature), and with excitation and ignition equipment, the authors remarked that they do not show any really significant reduction in size compared with the mercury-arc type at the voltages which can be used for traction motors, and that there is very little gain in efficiency. It may be added that although the advantages of semi-conductor rectifiers in size alone are not important, they allow flexibility of layout which may be valuable in a locomotive installation. On the other hand, the large number of connections between individual rectifying units is seen sometimes as a potential source of weakness.

An important section of the paper dealt with the effects of ripple on commutation in the locomotive or motor coach supplied through single-phase rectifiers. It has been found quite practicable to use standard d.c. motors, but it is usual to increase the circuit impedance by adding a smoothing reactor. While the harmful effects of ripple can be reduced by increasing the reactor size, a compromise is necessary as reactors are heavy. A ripple of between 30 and 50 per cent is normally allowed in order

to achieve minimum overall weight, for a reduction of ripple to 20 per cent would involve using a d.c. reactor of about 6.5 mH. inductance. Since a 3 mH. reactor rated at 800 amp. weighs about 0.5 ton, considerations of total weight make ripples as low as 20 per cent practically unattainable. The authors describe how the addition of a diverter across the main field reduces armature and main field heating and may improve commutation. By reducing the circuit inductance, however, it may make a larger reactor necessary to prevent more interpole heating and higher peak voltages on the commutator.

The companion paper to the above was presented by Messrs. T. E. Calverley and D. G. Taylor, also both of the English Electric Co. Ltd., with the title "Circuit Calculations for Rectifier Locomotives and Motor Coaches." Calling attention to the effects of ripple current, it showed the inaccuracies of accepted methods of calculation and showed a new approach by means of which solutions to both transient and steady state problems can be obtained, the equations being solved by an electronic digital computer. The paper should be a warning against assumptions that the rectifier principle is so well known in other spheres as to need no particular study in its application to single-phase, 50-cycle traction, and a sign of the fundamental research being directed in Britain to its further development.

## Spring Drives for Electric Traction

THE long exclusive reign of the axle-hung motor in British traction practice was due in part to the medium-speed traffic worked by electricity. When there was a prospect of electric traction from York to Newcastle, a well-known high-speed stretch, Sir Vincent Raven designed for the North Eastern Railway a 2-Co-2 locomotive with spring drives from cab-mounted motors. This locomotive ran trials on the Newport-Shildon line with passenger stock, but the main-line scheme for which it was built was not realised and the delay to the Manchester-Sheffield electrification caused by the second world war disposed of its chances of reappearing on that section. Some 20 years elapsed between the building of the N.E.R. 2-Co-2 and the completion of the next main-line electric locomotive for this country. This was the first of the Southern Co-Co series, which appeared before flexible drives for incorporation in power bogies were as widely known as they are today. Similarly, the Manchester-Sheffield locomotives were not fully representative of postwar practice although they did not enter service until the postwar years. The five high-speed diesel-electric Pullman trains for the Western and London Midland Regions were the first officially-announced examples by British Railways of units to run at speeds up to 100 m.p.h., and for these, as reported in our March 29 issue, fully-springborne motors will be used.

It was also announced that all the 100 electric locomotives to be built for the British Railways 25-kV., 50-cycle scheme will have springborne motors, for these, too, have basically a 100 m.p.h. maximum although some will be geared for a top speed of 80 m.p.h. At present it appears that the drives to be used will be of Continental origin, for development of such transmissions has been called for only rarely from manufacturers in this country. Exceptions to the axle-hung rule which come to mind are the Metropolitan-Vickers and G.E.C. 2-Co-2 locomotives for the former Great Indian Peninsula Railway, and the English Electric 1-Do-2 locomotives for the Wellington-Paekakariki section of the New Zealand Government Railways, all of which are fixed-wheelbase designs. An interesting recent development in springborne motors has been the cardan shaft drive from the Crompton-Parkinson motors of the Toronto Subway trains.

## Electrification from Luxembourg to Strasbourg

*Connection established between Belgian  
3,000-V. d.c. and French 25-kV. systems*



*French National Railways 25-kV. rectifier locomotive on dual-voltage track at Luxembourg Station, alongside Belgian National Railways 3,000-V. d.c. multiple-unit set*

route between Zoufftgen and Metz are taken from a traction substation located in an Electricité de France switching station at Thionville and comprising a Scott-connected group of two 10,000-kVA., 63/25-kV. transformers, with a third unit as a standby. Further substations are located at Remilly, Imling, Mommenheim and Geispolsheim. A dual-system substation at Luxembourg contains a 65/25-kV., 5,000-kVA. transformer supplying the line to the French frontier, and rectifiers for the 3,000-V. d.c. section to the Belgian frontier. Track-sectioning and paralleling equipment has been installed at Daerenbusch, near the Luxembourg-French frontier, so that the substations at Luxembourg and Thionville will be able to reinforce each other if necessary.

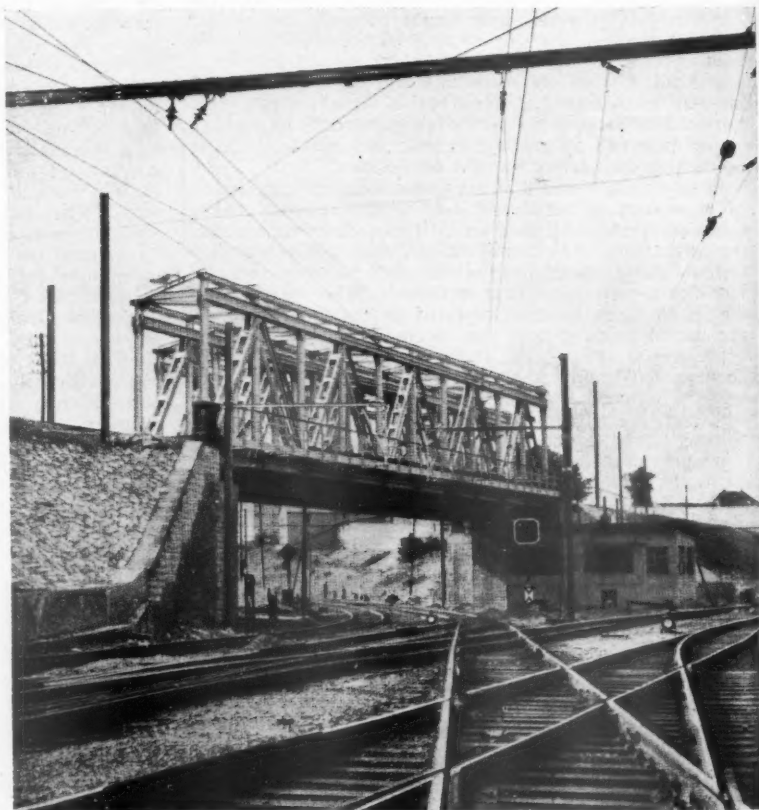
### Exchange of Locomotives

Through trains from Brussels to Metz and beyond reverse in Luxembourg Station. This procedure has simplified to some extent the task of changing  
(Continued on page 427)

**E**XTENSIONS of the French National Railways 25-kV., 50-cycle electrification beyond Thionville have been opened in several stages during the past year, with the result that when the Luxembourg National Railways line from Luxembourg was electrified to the French frontier at Zoufftgen, the simultaneous conversion of two short links in France (Zoufftgen-Hettange, 5.6 miles, and Hagondange-Metz, 11 miles) sufficed to provide a continuous 50-cycle route from Luxembourg to Metz. An inaugural train was run from Metz to Luxembourg on September 29, preparatory to the opening of public services on September 30 recorded in our October 5 issue. Work was proceeding meanwhile on electrifying from Metz to Réding and Strasbourg; and this further conversion, of 97.5 miles, was completed and opened to traffic on December 17, 1956. There is therefore now continuous 50-cycle electrification both from Luxembourg and from Lille to Strasbourg.

In Luxembourg, the use of industrial-frequency current at high voltage made it necessary to increase clearances at various points; near the frontier a 328-yd. tunnel was opened out (see our May 11, 1956, issue). Open wire communications circuits near the line were replaced by buried cables. Power signalling with relay interlocking was installed to replace the former manual signalling both on the 3,000-V. d.c. (Kleinbettingen - Luxembourg) and 25-kV. a.c. (Luxembourg-Bettembourg) sections.

Power supplies for the section of the



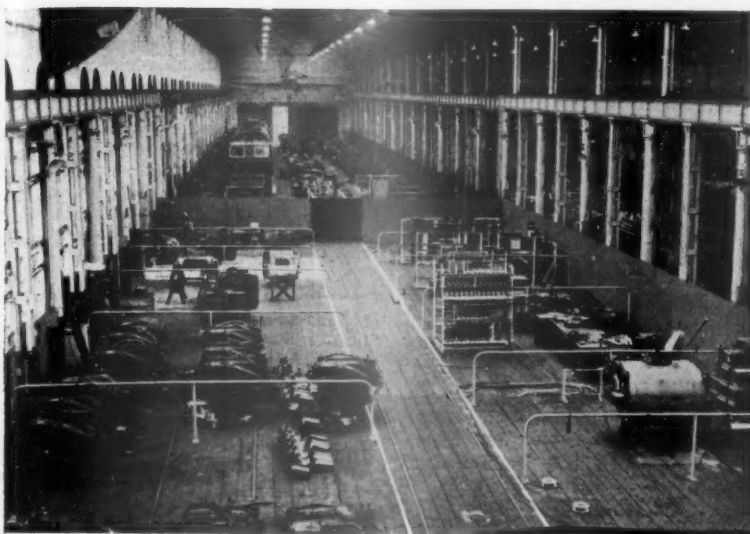
*Flyover at Luxembourg where the 25-kV. line to France crosses over the 3,000-V. d.c. electrification from the Belgian frontier*

# Repairs to Manchester-Sheffield Line Electric Locomotives

*Progressive system for periodic overhaul and testing*

*By J. S. Scott, M.I.LocoE.,*

*Locomotive Works Manager, Gorton, Eastern Region, British Railways*



General view of layout; the locomotive repair department is in the background

WITH the building at the Gorton Works of the Eastern Region of British Railways, of 57 1,868-h.p. Bo-Bo and of seven 2,760-h.p. Co-Co electric locomotives with electrical equipment by the Metropolitan-Vickers Electrical Co. Ltd. for the Manchester-Sheffield-Wath electrification scheme, consideration was given to providing a suitable place to deal with periodic and major overhauls to the locomotives, together with their ancillary equipment. Six Bo-Bo bogies, and two Co-Co bogies, were built as spares, to enable a quick exchange to be made when tyres required attention, and to provide replacements for bogies damaged in service.

A limited number of spares, such as pantographs, compressors, exhausters, traction motors and control equipment, was provided in the scheme for the purpose of a speedy exchange at the depot, and for the defective components to be sent to the main works for overhaul. In the early stages it was decided that the pantographs and batteries, which are changed at intervals, would best be dealt with at the depot when normal maintenance was required, and accordingly a portion of the Reddish depot was set aside and suitably equipped to deal with these components.

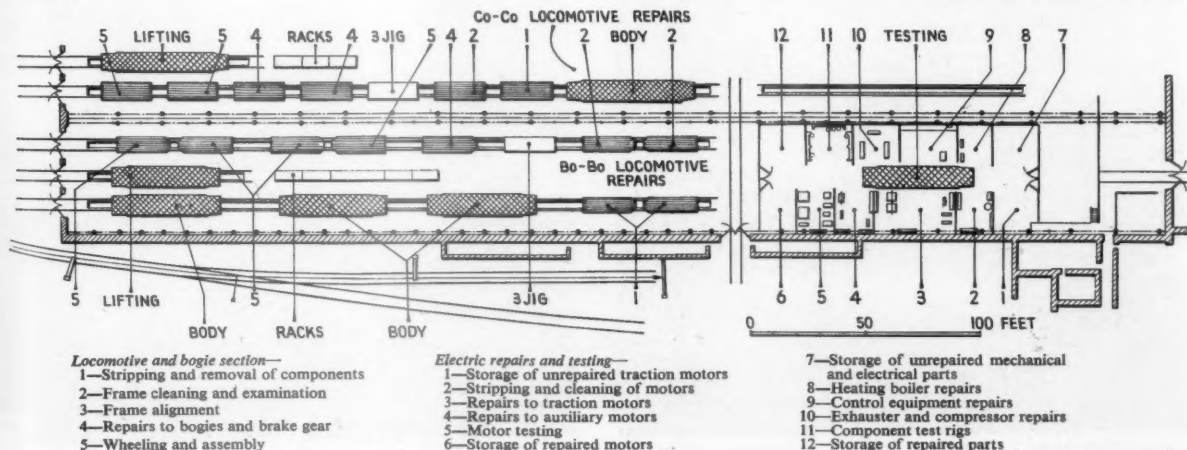
To deal with the periodical changing of bogies, which is carried out on a mileage basis, coincident with the

amount of tyre wear, a bay in the Gorton erecting shop, having suitable overhead crane power, has been laid out and equipped for this work, and also for the carrying out of major overhauls. Provision has also been made for the overhauling and testing of all ancillary equipment and control gear. The layout is shown in the accompanying diagram, from which it will be seen that the shop has been divided into two sections.

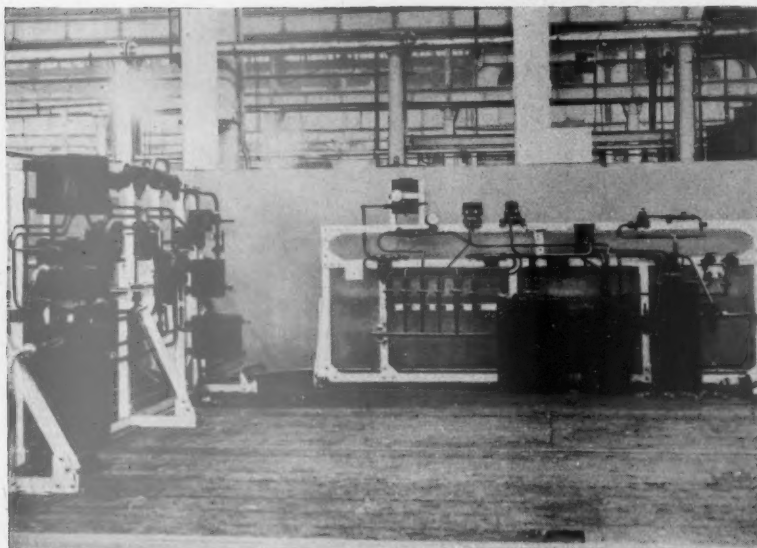
## Locomotive and Bogie Section

Locomotives requiring a change of bogies are received under power in the works and taken into the shop, when the body is lifted from the bogies and placed on jacks over an adjacent pit. The body is then cleaned internally by means of a portable industrial vacuum plant, and all fittings and machinery checked, tested, and adjusted as required. The body is placed on two fully repaired and tested bogies, complete with traction motors and brake gearing, and, after connecting cables and flexible air pipe, the locomotive is given a further test under the power line in the works yard, and returned to its depot at Reddish. The whole cycle of operations for this exchange of bogies is carried out in six hrs. for a normal periodic repair, and the locomotive received at the depot only requires daily maintenance to be carried out before it is put back into service on the same day.

In carrying out the changing of bogies, it is assumed that depot maintenance has been fully carried out, that all the electrical control gear and ancillary equipment is in good order, and that the defective components have been exchanged or repaired during the period the locomotive has been in service. In the case of major overhauls, all movable equipment is taken from the







*Test rig for mechanical and electrical equipment to simulate actual conditions*

locomotive for cleaning, repairing, and testing in the electrical section of the shop before being replaced within the body. Repairs to bogies are carried out in five stages: (1) stripping and removal of traction motors, brake gear and wheels; (2) frame cleaning and examination; (3) frame alignment; (4) repairs to bogies and brake gear; (5) wheeling and re-assembly of traction motors and brake gear. The operations are carried out progressively, each section being equipped with the necessary tools and racks for material, and all removable parts are bashed and examined before repair.

Checking of the bogie for alignment is done by means of a fixed jig, set down on the pit rails in the shop, and follows immediately after frame cleaning and examination. The jigs, which are fabricated assemblies fitted to cast-iron bedplates, have four and six sets of locating faces representing the faces of

the axleboxes of the Bo-Bo and Co-Co locomotives respectively. These locating faces are regularly checked for accuracy of position with the optical frame alignment equipment used for steam locomotives. The jig provides an accurate and speedy method of measuring wear and checking the alignment of the horn gaps, and ensures that correct clearances are maintained. In all cases minimum running clearances are restored, and opportunity is taken to check and adjust centres each time the bogie is received in the shops. Axles of all electric locomotive bogies are supersonically tested at each periodic repair, and careful records are made of their condition; roller and plain bearings are cleaned and adjusted at the same time.

It has been found advantageous to make all wearing parts of the body and bogies interchangeable, and so avoid delay in replacements, and fully utilise all the spare equipment provided for in

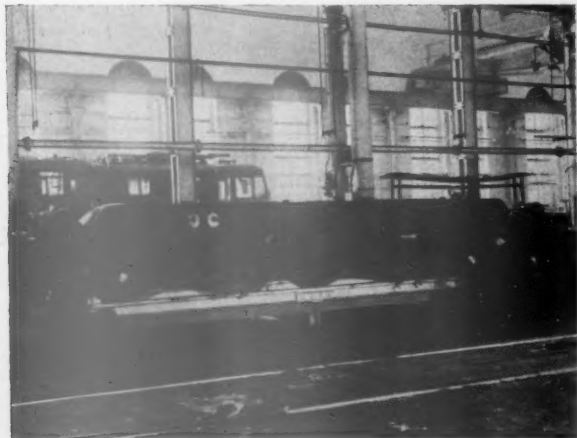
the scheme. Endeavour is made to bring worn parts up to nominal sizes after repair, and various jigs and fixtures are used for this purpose. In other cases, standard step sizes are introduced, and thus uniformity of parts is obtained. The low-built water tank and bogie brake gear of the Co-Co locomotives has made it desirable to repair these locomotives in the adjacent road to give more side movement when lifting the body. For the brake gear, a cradle has been devised which allows easy stripping and assembly to be carried out. This has been found most useful and, being portable, can be used in other parts of the shop, and is considered an improvement on the older method of having shallow side pits for this operation.

#### Electrical Repairs and Testing

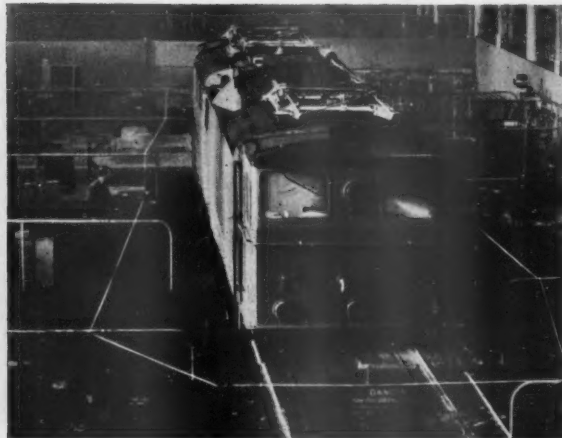
This section is separated by a partition from the main erecting shop, and is laid out in 12 sub-sections to deal with specific parts of the equipment: (1) storage of unrepaid traction motors, (2) stripping and cleaning of motors, (3) repairs to traction motors, (4) repairs to auxiliary motors, (5) motor testing section, (6) storage of repaired motors, (7) storage of unrepaid mechanical and electrical parts, (8) heating boiler repairs, (9) electrical control equipment repairs, (10) exhaustor and compressor repairs, (11) test rigs for electrical and mechanical components, (12) storage of repaired parts.

The normal repairs given to traction motors at periodic repairs are cleaning the brush gear and insulators, checking the armature bearings and refitting the suspension bearing. The motor is then given a light running directional test using 220 V. d.c. supply from the generator in the test section. Auxiliary motors are dealt with only at major overhauls, unless they are found defective in service, in which case they are replaced by a spare unit. The defective unit is sent to the main works for overhaul.

The electrical testing equipment com-



*Portable cradle for stripping and assembly of brake gear*



*Flash testing of locomotives after completion of repairs*

prises a motor generator set with an output of 220 V. d.c. at 100 amp. with control switch and panel and transformers and rectifiers for 1,500 and 50 V. d.c. supplies. Six bed plates are available in the motor testing section, two for traction motors, one each for air compressor, exhauster, and the two different types of motor generator sets. A portable H.T. 5,000-V. transformer is provided in the scheme for flash testing equipment after major repairs.

After repairs to the heating elements and boiler fittings a flash test is made using the portable H.T. transformer in the section. Following major overhauls to electrical control equipment and before replacing, the panels are connected to the test rig, for a supply of air at the correct pressure, and to the 50-V. d.c. current for operational

testing. Exhausters and compressors are stripped and overhauled, and connected to test rigs for the checking of air and vacuum brake components, electric and electro-pneumatic switches.

The test rig for mechanical and electrical components is most comprehensive in its function, as it is possible, by connecting this section to the electrical testing section nearby, to reproduce the working conditions under which the brake and electrical control equipment will operate. Power for the transformer of motor generator set, together with the compressor and exhauster undergoing test, is connected to the various brake and electrical components on the test rig. These can be either master components of known performance, or repaired components undergoing test. In addition, the elec-

trical overload relays and isolating switches, and so on, can be tested using the current from the motor test section.

In effect, this means that the whole brake and electrical control equipment can be tested and proved on each unit before it is replaced in the locomotive undergoing major overhaul. These tests are also applied to repaired units before they are returned to the depot as spares. At major overhauls it is necessary to apply a flash test to the whole equipment in the body. For this purpose a portable H.T. transformer is used, testing at 3,000 V. to earth on the H.T. side, while the L.T. side is tested at 230 V. to earth. It is possible, therefore, with the equipment available, for complete tests to be carried out to the schedule laid down by British Railways for this purpose.

### Electrification from Luxembourg to Strasbourg

(Concluded from page 424)

locomotives when travelling from the 3,000-V. d.c. to the 25-kV. a.c. section and vice versa, as the two types of locomotive are attached and detached at opposite ends of the train. One platform line in Luxembourg Station is allocated to this changeover and is equipped with a contact line in two sections, either of which can be connected to the a.c. or the d.c. supply. Switching of the two supplies is effected automatically as the points and signals applying to the running and shunting movements are operated from main and subsidiary control panels. When a train is accepted from the Arlon direction and routed into the dual-voltage track, both sections of contact line are

connected to the 3,000-V. d.c. supply, but the relevant signals do not clear until this condition has been proved. As it passes from section 1 to section 2 of the contact line, the train shunts a track circuit which causes section 1 to be de-energised. A further track circuit ensures that if the signal near the end of section 2 is overrun, the circuit-breaker feeding the 25-kV. catenary beyond the platform is tripped.

After being uncoupled from its train, the 3,000-V. locomotive can run forward into a short reversing siding communicating with other d.c. tracks. This movement can only be signalled when section 2 of the contact line is connected to the 3,000-V. supply.

The 25-kV. locomotive is now backed on to the other end of the train, the setting-up of the route for this purpose causing section 1 of the contact line to

be energised with a.c., subject to precautions similar to those already described. When the train leaves and clears the dual-voltage track, both sections of contact line are isolated automatically from the electrical supplies.

### Signal Aspects

Special signal aspects have been introduced for these electric locomotive movements. They are given by flashing lights—yellow as a caution indication, violet for "stop," and white in conjunction with a normal clear aspect for "proceed," all three being understood to apply to electric locomotives only. The yellow and violet flashing signals are normally extinguished. When a movement is signalled for a steam or diesel train, the violet "stop" lights associated with signals which have been cleared give flashing indication.

## Steam and Electric Suburban Working in Portugal



Photos courtesy]

German-built tank engine on suburban train near Lisbon, Portuguese Railways



[Boletim da C. P.]

Multiple-unit train on newly electrified section in Lisbon suburban area (see our January 18 issue)

## Pivotless Bogie Experiment in Austria

*Linkage system improves accessibility of traction motors*

IN two of the Austrian Federal Railways "1010" class Co-Co electric locomotives, a linkage connection between bogie and underframe has been adopted experimentally instead of a pivot seating in the bolster. This arrangement enables the central traction motor to be withdrawn from underneath the bogie without dismantling the bolster, which in the other locomotives of the series is below the motor.

It can be seen in the accompanying drawing that the longitudinal links *A* are attached at one end to the underframe side members and at the other end to elbow cranks supported from

and underframe. These are normally separated by  $\frac{1}{8}$  in., but in the event of a breakdown of the linkage they would bear against each other on the side of the locomotive affected and share in distributing the tractive effort.

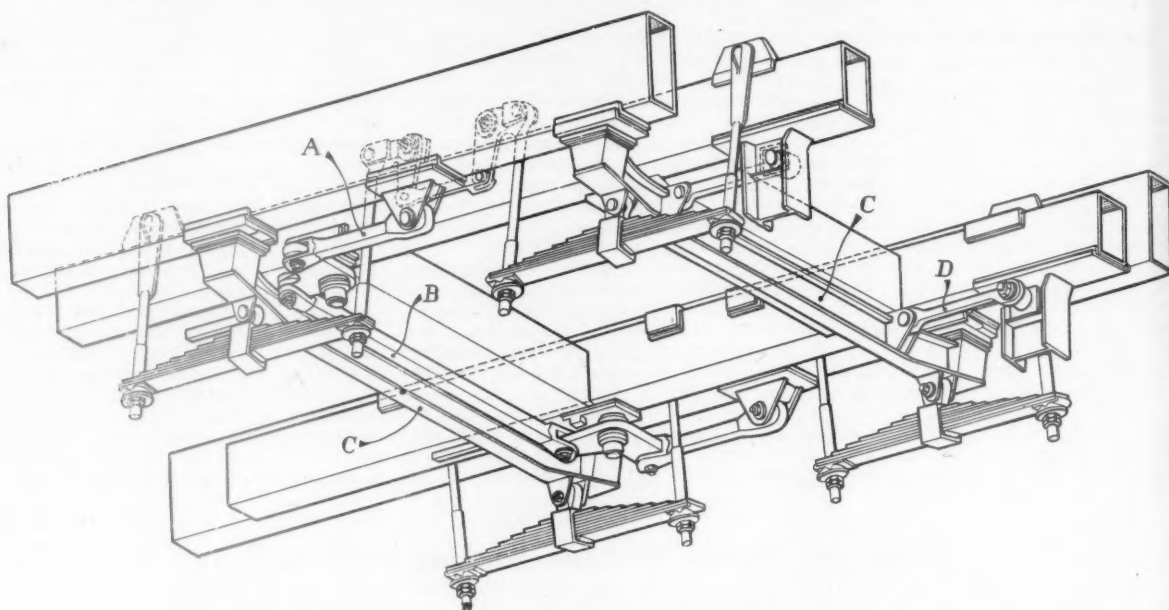
### Bolster Springs

The bolsters *C* are carried on springs suspended on swing links from the bogie frame, the attachments of the links to the springs being designed to give a self-centring action to the assembly. Longitudinal links *D* maintain the bolsters at right angles to the bogie frame in all conditions. The four

or underframe. On both sides of the locomotive the bolster springs are equalised, and the system incorporates stops to prevent the underframe from dropping on to the bogie frame in the event of breakage of a spring.

Sideways movement of the bolster is checked to some extent by the self-centring action of the bolster spring suspension links, but the main damping is afforded by grease-lubricated sprung buffing surfaces between the bogie and the underframe side members.

According to an article by Herr J. Wallner in the December, 1956, issue of *La Traction Electrique dans les Chemins*



*Experimental pivotless bogie with linkage connection system*

the bogie frame. The cranks are connected by the crossbar *B*, and the complete system of links and joints has the effect of forming a virtual pivot at the mid-point between the suspensions on the underframe.

As a precautionary measure in case of failure of any part of the system, stops are fitted to cross-members on the bogie

bearers are therefore arranged to slide on the underframe to accommodate relative rotational movement, and each bolster is located in the bearers by a semi-spherical joint which allows for swaying of the body and is shaped so that turning movements will not cause the bolster spring suspension links to come into contact with the bogie frame

*de Fer*, the bogie pivoting system described results in a saving of some 3.8 tons in locomotive weight. There is, however, a greater tendency to weight transfer, for the plane of the virtual pivot is 32½ in. above rail level compared with the height of 10 in. above rail of the actual pivot in the other locomotives of the series.

**RUHR ELECTRIFICATION TO BE INAUGURATED.**—The introduction of multiple-unit electric services from Düsseldorf to Hamm via Essen and Dortmund is scheduled to coincide with the introduction of the summer timetable. Another new feature will be the running of through trains from Western Germany to Dresden via Bebra and Oebisfelde; the interzonal trains, which at present cross from

Western Germany into Eastern Germany at these frontier points, terminate at Leipzig.

**ELECTRIFICATION OF FLUSHING BRANCH.**—The Netherlands Railways summer timetable will include the introduction of electric services from Breda to Bergen-op-Zoom and from Roosendaal to Flushing, over lines at present diesel-worked. The multiple-unit stock for these services is

provided by new construction and by transferring units from the Amsterdam-Arnhem-Nijmegen service, which will in future be maintained by locomotive-hauled trains conveying through coaches for Germany, giving a two-hourly interval service from Amsterdam to Cologne via Arnhem and Emmerich. Two additional trains will also run between Holland and Germany via Bentheim.



## RAILWAY NEWS SECTION

## PERSONAL

Dr. R. E. D. Bishop has been appointed to the Kennedy Chair of Mechanical Engineering at University College, University of London, from October 1, 1957.

Mr. Karnail Singh, General Manager, Chittaranjan Locomotive Works, who, as recorded in our March 22 issue, has been appointed Member (Engineering), Indian

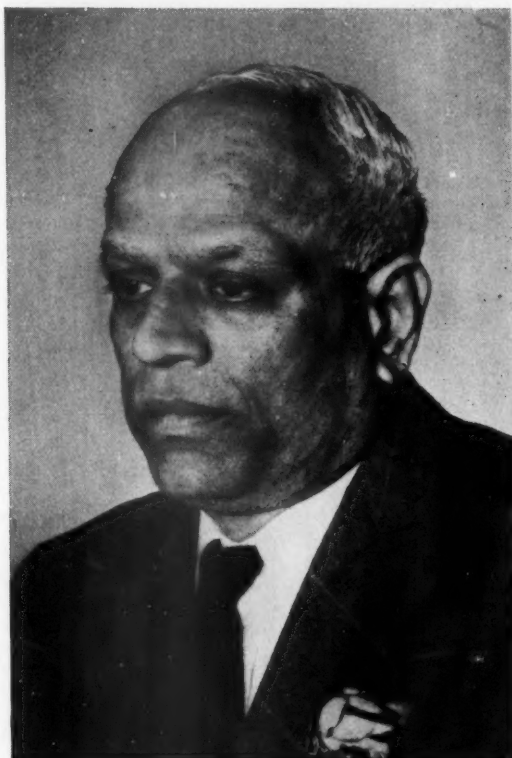
Shri K. Ramachandran, Additional Member (Mechanical), Indian Railway Board, who, as recorded in our April 5 issue, was appointed General Manager, Chittaranjan Locomotive Works on March 4, was born on March 2, 1903. He began his career in 1930 with the Bengal Nagpur Railway as a probationer in the Workshops, and became District Locomotive & Carriage Superintendent in 1942, which appointment was confirmed in October the following

Mr. S. G. Ward has been appointed Regional Establishment & Staff Officer, Western Region, British Railways.

Mr. A. F. Collins, M.I.Loco.E., Assistant Mechanical Engineer (Development), Railways, London Transport Executive, is retiring. Mr. Collins entered the service of the London Electric Railway as a draughtsman in the Lifts & Escalators Division in 1918. Two years later he became Personal



*Mr. Karnail Singh*  
Appointed Member (Engineering),  
Indian Railway Board



*Shri K. Ramachandran*  
Appointed General Manager of the  
Chittaranjan Locomotive Works

Railway Board, took up his new appointment on January 25, 1957. Mr. Singh, who was born in July, 1904, began his railway career in November, 1927, as an Assistant Executive Engineer on the North Western Railway. He served on this railway in various capacities until partition in August 1947, after which he worked on the newly-created East Punjab Railway for a while. In November, 1947, he became Engineer-in-Chief, Assam Rail Link Project. Mr. Singh was appointed General Manager, Northern Railway, in April, 1952, and General Manager, Chittaranjan Locomotive Works, in February, 1954.

Mr. A. E. C. Dent and Mr. George Dow have been appointed directors of the Trent Motor Traction Co. Ltd. Mr. E. S. Hunt and Mr. H. G. N. Read have resigned from the board of that company. Mr. George Dow has also been appointed a director of East Midland Motor Services Limited, replacing Mr. H. G. N. Read, and a director of the North Western Road Car Co. Ltd., replacing Mr. E. W. I. Arkle.

Shri Ramachandran was appointed Deputy Chief Mechanical Engineer in March, 1947, and, in September of that year, was posted on special duty to the Railway Board with the rank of Chief Mechanical Engineer. In June, 1948, he became Chief Mechanical Engineer of the Bengal-Nagpur Railway, and, in April, 1952, Chief Mechanical Engineer of the Eastern Railway. His appointment as Additional Member (Mechanical), Railway Board—his most recent appointment—took place in June, 1956.

Mr. H. R. Bowker has been appointed to succeed the late Mr. Leslie Ward, who died on March 13, as Manager of the Manchester office of Tothill Press Limited, the company owning and publishing this journal.

Mr. H. H. Swift, who, until his retirement in October last was South Wales Area Officer for the Western Region of British Railways, has been appointed a London Director of John Morgan (Builders) Ltd.

Technical Assistant to the late Mr. W. S. Graff-Baker, and was appointed New Works Assistant in 1930. In 1937 Mr. Collins was appointed an officer of the L.P.T.B. with responsibility for all new rolling-stock contracts as well as the preparation of specifications, designs, and technical data. He has been intimately connected with all Underground rolling-stock developments from the 1920s, including the introduction of air-operated doors and electro-pneumatic brakes, the postwar lightweight "R" stock on the District line, and the current experiments with rubber-springing for bogies. He was also closely associated with the 1938 tube and surface line stock on which under-floor-mounted traction equipment were introduced. This permitted passenger capacity on each seven-car train to be increased by 12½ per cent.

Mr. R. I. D. Arthurton succeeds Mr. Collins as Assistant Mechanical Engineer (Development), London Transport Executive. Mr. Arthurton who was born in

1904, followed a three-year course in mechanical engineering and motive power at the City & Guilds (Engineering) College, London University, graduating B.Sc. (Eng.). After serving a post-graduate apprenticeship in the Slough works of G. D. Peters & Company he was employed by this company in connection with its railway rolling-stock interests and was largely responsible for the development of its power-operated door and automatic coupler equipments. In 1930 he was seconded to the Buenos Ayres Central Terminal Subway Company to help in the organisation of maintenance

Mr. Frank Grundy, M.Inst.T., Chief Commercial Manager, North Eastern Region, British Railways, who, as recorded in our March 22 issue, has been appointed Chief Traffic Manager of that Region, began his career with the Lancashire & Yorkshire Railway at Bury in 1915. He served in the R.N.V.R. from 1917 to 1919, and, after training at stations and district offices, joined the Chief Goods Manager's staff at Euston, L.M.S.R., in 1925. He worked in various headquarters' sections from then until 1933, when he joined the then newly-formed Chief Commercial Manager's Re-

Mr. F. W. Burton, who, as recorded in our February 22 issue, has been appointed Accountant, Southern Region, British Railways, qualified as an Incorporated Accountant in 1923. In 1925 he joined the Nizam's State Railway in Hyderabad (Deccan), India, as Assistant to the Chief Accountant. He served this railway for 21 years (except for a period of service during the war as a Flight Lieutenant, R.A.F.V.R.) becoming successively Senior Assistant Accountant, Deputy Chief Accountant, Acting Deputy General Manager, and Chief Accountant. Shortly after his return from India in 1946,



*Mr. F. Grundy*  
Appointed Chief Traffic Manager,  
N.E. Region



*Mr. F. W. Burton*  
Appointed Accountant, Southern Region,  
British Railways

services for the then new underground railway system, and, the following year, he represented his company and its associates at the British Empire Exhibition at Palermo, B.A. Mr. Arthur joined the staff of the L.P.T.B. in 1936 as a Technical Assistant in the Chief Mechanical Engineer's Department (Railways) and was closely associated with the purchase of the very large volume of new rolling stock acquired by London Transport in the following years. He was promoted to the position of Development Engineer in 1947 and, in 1951, was appointed to the grade of Principal Executive Assistant, with responsibility for the contract and inspection work of the Department. In 1949 he accompanied a London Transport party to the U.S.A. and Canada. He is a Chartered Mechanical Engineer, a Member of the Institution of Locomotive Engineers and an Associate Member of the Institute of Transport. He serves on the General Council of the Engineers' Guild and is current Chairman of the Metropolitan Branch of that body.

search Section. In 1938 Mr. Grundy went to the L.M.S.R. staff college at Derby, and later in the same year became Goods Agent at Accrington. Thereafter he held positions as Goods Agent, Bury (1939-41); Assistant to District Goods Manager, Bolton (1941-43); Head of Merchandise Services Section, Chief Commercial Manager's Office, Euston (1943), and Goods Agent, St. Pancras & Somers Town (1943-44). He was appointed Assistant to Chief Commercial Manager (Goods) Euston, early in 1944; District Goods Manager, Wolverhampton, in May, 1945, and Assistant Chief Commercial Manager (Goods), Euston, in 1946. He served as Executive Officer (Goods) at Railway Executive Headquarters before being appointed Assistant Commercial Superintendent, Western Region, in 1950, and moved to York as Chief Commercial Manager, North Eastern Region, in 1954. During the 1939-45 war his services were lent to the Ministry of Food; he served as an Assistant Director of Transport, and Deputy Divisional Food Officer (North West).

Mr. Burton took up the appointment of Chief Accountant, International Aeradio Limited, and, in May, 1948, was appointed Senior Assistant to the Director of Audit, British Transport Commission, becoming Assistant Director in October, 1948. He became Director of Audit in 1949.

We regret to record the death on April 3 of Mr. Walter Frederick Heaton, Assistant District Commercial Manager, Ipswich, Eastern Region, British Railways, since 1946. Mr. Heaton began his career with the former North Eastern Railway at Leeds in 1915. After war service he returned to Leeds in the District Goods Manager's office, and subsequently held appointments in the office of the Chief General Manager at Kings Cross. He later became Traffic Agent, Newcastle (New Bridge Street). In 1945 he was appointed Assistant Cartage Manager, Southern Area, and, the following year became Assistant District Commercial Manager at Ipswich, the position he was holding at the time of his death.

Mr. G. A. Graves has been appointed Public Relations Officer of the London, Tilbury & Southend Line of the Eastern Region of British Railways.

Mr. E. J. Church, Divisional Staff Officer, Pickfords Division, British Road Services, has retired. He has been succeeded by Mr. S. I. Brinjes.

Mr. L. I. Sanders, Technical Development Officer, Eastleigh Carriage & Wagon Headquarters, has been appointed Carriage & Wagon Works Manager, Eastleigh, succeeding Mr. C. A. Shepherd, who has been promoted.

At the annual luncheon of the Institution of Locomotive Engineers on April 5 the President, Mr. J. F. B. Vidal, presented the Gold Medal of that body to Sir William A. Stanier. Mr. Vidal also announced that Mr. E. S. Cox, Vice-President, will be the President of the Institution for the next session.

The following appointments have been announced by Birfield Industries Limited: Mr. E. J. Power becomes Executive Director of the Automotive Division of the company. He will be responsible for sales co-ordination of all automotive activities within the Birfield Group. Mr. F. Oldfield has been appointed Northern Area Sales Manager, Mr. R. J. Tristram has been appointed an Area Sales Manager, Mr. J. A. Gilliard becomes Birmingham Area Sales Manager, Mr. G. N. Kelsall has been appointed Coventry Area Sales Manager, and Mr. L. J. Richardson becomes London Area Sales Manager of the Automotive Division of the company.

The funeral service for the late Lt.-Colonel K. R. N. Speir, whose death on April 1 was recorded last week, was attended by the following:—

Mrs. Speir (widow), Mr. and Mrs. Anthony Denny (son-in-law and daughter), Major Malcolm Speir (brother), Mrs. Anthony White (sister), Major-General Geoffrey White, Mr. Michael Speir, Miss B. Speir, Brigadier and Mrs. C. White, Mrs. N. Patrick, Miss J. White, Miss S. Speir, the Hon. Mrs. Gilbert Johnstone, Lord and Lady Gifford, Miss Dansey, Brigadier J. Patrick, the Hon. Mrs. Bruce, Mr. David Bruce, Mrs. A. W. Raikes, Miss S. P. Duncombe, Mr. and Mrs. James Denny, Mrs. E. Denny, Miss R. M. Denny.

Elizabeth Lady Macready, Sir Nevil Macready, Lady Eardley-Wilmot, Sir Michael Barrington-Ward, the Dowager Lady Grant, Sir Charles Wingfield, Lady (Lancelot) Hare, Major-General Gilbert Szlumper (Chairman, Transportation Club), Major-General and Mrs. B. T. Wilson, Mr. H. G. N. Read, Mr. C. E. R. Sherrington, Mr. R. Hacker, Mr. D. Handover, Mr. L. Castle, Captain Gerald Coningham, Mrs. J. Steele, Mr. M. G. Bennett, Mrs. R. Mansel-Pleydell, Mr. and Mrs. John Villiers, Mr. Robert Tilney, Mr. Henry Sunley, Dr. and Mrs. G. T. Cregan, Mrs. Martin Soames, Mrs. H. B. Elliott-Wood, Mrs. Anthony Vickers, Dr. and Mrs. C. N. Gosse, Mr. C. Johnstone, Captain and Mrs. J. Herring, Mr. G. R. Smith, Mr. B. W. C. Cooke (Editor, *The Railway Gazette*), Mr. A. J. Webb (General Superintendent, Staff & Training, London Transport Executive), Mr. H. J. Bourn (Continental Superintendent, Southern Region, British Railways), Mr. E. W. Arkle (Chief Commercial Manager, London Midland Region, British Railways), with Mr. W. N. Roberts and Mr. K. L. Mallory.

Viscountess Daventry and the Hon. Lady Drummond were among those unable to attend.

Mr. Peter B. Higgins has been elected President of the Association of Bronze & Brass Founders.

Mr. A. W. Newberry has been appointed Chief of Police, Scottish Area, British Transport Commission.

Mr. Stanley N. Loosen has been appointed Sales Director of the Anti-Attrition Metal Co. Ltd.

Mr. J. O. Hitchcock, a director of the Mond Nickel Co. Ltd., has been elected a director of Henry Wiggin & Co. Ltd.

Mr. M. J. J. Richards has been appointed Manager of the London branch sales office of the British Aluminium Co. Ltd., with effect from May 16, succeeding Mr. W. J. Allen, who is retiring.

Mr. D. Martin, Chief Experimental Engineer of the Diesel Division of the English Electric Co. Ltd., has relinquished that position to become Chief Engineer, Alan Muntz & Co. Ltd.

Metal Industries Limited announce that the Rt. Hon. Lord Colyton has been appointed a director of that company. Mr. J. T. Rymer has resigned from the board.

Alldays & Onions Limited announce that Mr. J. Erskine, having retired on March 31, 1957, has resigned the position of Managing Director of the company. Mr. Leonard Lee succeeded him as Managing Director on April 1.

Mr. C. L. Old, Principal of the College of Technology, Wolverhampton, has been appointed Group Education Officer of Vickers Limited. It is expected that he will take up his appointment on September 1. He will co-ordinate all educational and training activities of the Vickers Group.

Dr. W. H. Darlington, Chief Engineer, Gas Turbine Engineering & Gear Engineering Departments, Metropolitan-Vickers Electrical Co. Ltd., has been awarded the 1956 Silver Medal of the Institute of Marine Engineers for his paper "Some Considerations of Wear in Marine Gearing."

#### INSTITUTE OF TRANSPORT

Nine members and one associate member retire from the Council of the Institute of Transport on September 30, 1957, and to fill the vacancies the Council has nominated the following:—

Mr. J. M. Birch, Managing Director, Birch Bros. Ltd.

Mr. A. R. Dunbar, Assistant General Manager, North Eastern Region, British Railways.

Mr. J. S. Gavin, Member, Tilling Group Management Board.

Mr. K. Granville, Commercial Director, British Overseas Airways Corporation.

Mr. C. A. Herring, Personnel Director, British European Airways Corporation.

Mr. A. S. C. Hulton, Managing Director, Shell Tankers Limited.

Mr. R. M. Robbins, Secretary & Chief Public Relations Officer, London Transport Executive.

Mr. L. M. Sayers, Assistant General Manager, London Midland Region, British Railways.

Mr. E. G. Whitaker, Deputy Transport Adviser, Unilever Limited, and Chairman, S.P.D. Limited.

Mr. C. S. Whitworth (Associate Member), General Assistant to General Manager, Eastern Region, British Railways.

Mr. D. M. Price has been appointed Secretary/Accountant of Expandite (South Africa) (Pty.) Limited, a subsidiary of Expandite Limited.

Mr. R. E. Harris, resident Sales Manager of Expandite (South Africa) (Pty.) Limited for the past three years, has been appointed a director of that company, which is a subsidiary of Expandite Limited.

Mr. J. B. Edwards, Technical Representative of Expandite Limited, will leave this country on April 23 for a tour of Germany and will also pay a short visit to Belgium and Holland.

Mr. Tom A. Higgins, Manager of the Electrical Department of the Expanded Metal Co. Ltd., leaves this country for New York on April 15 for a four-week business visit to Philadelphia, Erie, and Chicago.

Mr. W. K. Wallace, Past-President of the Institution of Civil Engineers, has been appointed a director of the Elastic Rail Spike Co. Ltd.

Mr. Eric Town, Director & General Manager of Fredk. Town & Sons Limited, a subsidiary of Thos. W. Ward Limited, left London by air on March 31 for South Africa with a view to expanding the company's drilling machine business. He will be returning from Johannesburg by air on May 5.

Mr. L. M. Broadway has been elected Deputy Chairman to the board of C. C. Wakefield & Co. Ltd. He will hold this office in conjunction with his position as Managing Director, a position he has held since 1954.

**GALLANTRY AWARD FOR EUSTON SHUNTER.**—For saving the life of a passenger who fell between a carriage and the platform edge when alighting from a moving train, Shunter H. W. Carter, on March 27, at Euston, received a citation and an award from Mr. L. W. Cox, Chief Operating Superintendent, London Midland Region. When on duty at Euston on Christmas Eve he saw the passenger fall between the train and the platform, fracturing his pelvis. Shunter Carter ran forward and supported him until the next gap between carriages appeared. Then, at some risk of being pulled down on to the line himself, he held on to the passenger and moved along with the train supporting the passenger in the gap until the train was brought to a standstill.

**NEW VESSEL FOR ARRAN SERVICE.**—A new general-purpose vessel, the *Glen Sannox* will be brought into service by the Scottish Region of British Railways this summer. This vessel is similar in design but considerably larger than the general-purpose vessels at present maintaining the Gourrock—Dunoon and Wemyss Bay—Rothesay services. There will be accommodation for 1,000 passengers, 40 cars, and 40 tons of cargo in containers, and, when cargo is not carried, for an additional 20 cars. The new ship will provide a much improved service to and from Arran. During the summer months there will be four services daily in each direction. A late sailing at 7.20 p.m. to Fairlie is designed to give a full day on the Island and it is confidently expected that there will be a considerable increase in excursion and motorcar traffic.



## NEW EQUIPMENT AND PROCESSES

### Attachments for Lifting Trucks

**S**PECIALLY designed attachments have been developed to make the manufacturer's standard Model 100 Freightlifter more versatile and suitable for the particular class of work encountered in railway freight handling.

The vehicle accessories have been developed in collaboration with the Western Region of British Railways and it is stated that the heaviest railway containers (in this country) can be lifted and safely transported either by forks, or a special overhead attachment. A six-ton box jib, one-ton searcher jib and a container spreader set, as attachments, are provided, to cater for any traffic which must be lifted from above, or to handle equipment specifically built for this method, all of which sleeve onto the forks and are secured by single-hole fixing.

The box jib converts the appliance into a standard six-ton mobile crane and the one-ton searcher jib is capable of clearing heavy articles from the far corners of covered vans from ground level.

The container spreader set enables covered containers to be lifted, in the conventional manner. A BD type container has, however, been adapted by fitting troughs beneath the floor to permit entry by the forks.

The Freightlifter is a long wheel-base heavy duty fork lift truck of 18,000 lb. lifting capacity. It is powered by a 70-b.h.p. petrol or diesel engine. The hydraulic lifting ram is 6½ in. dia., and is capable of a lift up to 24 ft. A road speed of up to 22 m.p.h. can be attained. A hydraulic booster in the steering linkage assists steering even when the truck itself is stationary; the minimum turning circle is 14 ft. 3 in. rad.

The illustration shows a specially fitted lift truck handling a BD type container at a Birmingham goods depot.

Price and delivery details of the Freight-

lifter and range of special accessories may be obtained on application to the manufacturer, Shelvoke & Drewry Limited, Letchworth, Herts.

### Bin Dumper Attachment

**T**HE Hydrum automatic forward discharge bin attachment for fork lift



trucks and stackers is of application to depots and repair shops, for example, for the disposal of machine shop swarf and scrap.

The attachment, which can be made to suit any fork lift truck, can be fitted in a few minutes. As it operates by the lift of the truck, no additional hydraulics are required, and a controlled discharge can be made at any height.

Picking up the bin, it is stated, does not require very accurate driving since the dumper is designed to allow some latitude in the approach. When the carriage is raised the slotted arms of the attachment engage the spigots on the side of the bin, lifting it clear of the ground. While

approaching the dumping area the bin is raised to the required discharge height and this lifting motion unwinds a wire rope from a spring-loaded drum on the floor of the truck. At the required height a hand or foot operated brake is applied to the drum, preventing further unwinding of the wire rope, but the lifting of the attachment and bin is continued causing the rope to pull on a lever on the dumper, rotating the container and discharging the load. When the brake is released, the bin is returned to an upright position by heavy coil springs, and can then be lowered and replaced. On being lowered to the floor, the attachment is disengaged automatically from the bin, and is then ready to collect the next bin.

The frame is of welded steel construction, with heavy steel linkage and heavy duty helical return springs, built with hook type hangers to mount on the fork bar of truck, and quick release latches to engage the bottom bar of the fork carriage of the truck. Bins or other containers can be designed and built to customers' requirements, or existing bins can be modified.

The details of price and delivery may be obtained from the manufacturer, R. H. Corbett & Co. Ltd., Hydrum Works, Burgess Hill, Sussex.

### Propane Floodlighting

**A**N addition to the manufacturer's range of lighting equipment, but designed for operation on L.P. propane gas is the BT. 25 Floodlight, suitable for railway track repairs at night, tunnel inspection, and so on.

Because the lamp operates on propane and not mains gas it is readily portable. The floodlight is strongly constructed and fitted with a double texture shock-resisting mantle and armoured glass and is rated to produce 10,000 mean reflected candle power.

Leading dimensions of the BT.25 are, breadth, 14½ in.; depth, without operating handle, 10 in.; height, including bracket,



19½ in.; reflector dia., 14 in.; and centre of reflector from base of turntable, 10 in. The weight of the projector with its bracket and turntable is 14½ lb. The gas consumption of the floodlight is 4.5 cu. ft. per hr. at a working pressure of 14 p.s.i.

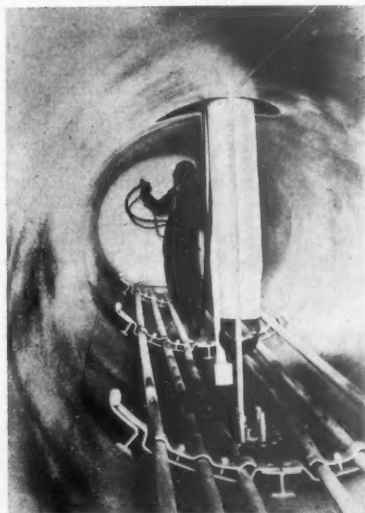
The inlet nozzle cock which is fitted is for ½-in. bore flexible hose and an amber filter can be supplied for use in fog as an extra.

The BT.25 Floodlamp can be supplied complete with a circular turntable base for the user's own mounting but mounting stands are also available if required. These are of two sizes, lifting the lamp to a height of from 4 ft. to 7 ft. and 15 ft. to 20 ft. The weight of the small stand is 34 lb., the largest is 24 lb.

Price and delivery details are available from the manufacturer, The Tilley Lamp Co. Ltd., 70-72, Jermyn Street, Piccadilly, London, S.W.1.

### Neoprene-Based Anti-corrosion Coatings

TO counteract corrosion due to conditions of unusual severity where usual anti-corrosive paint is not effective, a product which will be known by the trade name of Semprene-Adcora, is now available in a range of coatings.



This range is based on neoprene, a synthetic rubber, and is stated to have a good resistance to a large number of acids and alkalis, to possess a high tensile strength and elongation and to withstand continuous exposures up to 250° F.

Applications include the lining of rail tank wagons used for the conveyance of hot caustic soda and a wide range of acids.

One advantage of using neoprene-based coatings is stated to be because, with these materials, it is easy to obtain single-coat films of sufficient thickness to prevent failure of the coatings and thus their protection of the surfaces covered.

The surface of the metal to be treated is preferably cleaned by wire brush or other methods, and all scale and rust completely removed. The coating is then applied by brush. This work, although not of a skilled nature, requires fairly careful supervision

to obtain the best results. It is hoped that the finishes to the coatings will be available in colours in a few months time.

The illustration shows a neoprene-based lining being applied by spray gun to the interior of an American rail tank wagon.

Semprene-Adcora products are being manufactured by Semtex Limited, a Dunlop Company, and serviced by E. & F. Richardson Limited, Buckingham, to whom all inquiries should be sent concerning the application, price, and delivery of these coatings.

### Capless Indicator Lamp

REDUCED mounting depth and greater resistance to shock and vibration compared with conventional lamps are some of the advantages obtained with the Mazda Capless Indicator Lamp. This development is of application to all railway equipment requiring this type of indicator, such as diesel locomotive engine control warning lights.

The lamp is some 5 mm. shorter than a conventional indicator lamp of similar rating. Present lamps are vacuum type rated at 12 V., 2.2 W. but the manufacturer is prepared to consider increasing the range to include all the normal vacuum lamp ratings up to 12 V. with a maximum loading of 3 W.

The design dispenses entirely with any form of metal cap. It consists of a small glass bulb sealed by a pinched glass base on the diagonals of which are the electrical connections. Positive retention in the holder is achieved by means of indentations in the base gripped by the socket contacts. The lamp will operate in ambient temperatures as high as 600° F. The bulb diameter is  $11 \pm 1$  mm. (nominal), and the average life is 500 hr. operation at 14.5 V.

The price and delivery details may be obtained on application to the manufacturer, the A.E.I. Lamp & Lighting Co. Ltd., 18, Bedford Square, London, W.C.1.

### Planning Wall Chart

THE latest addition to the Movigraph range of charting systems is the Time Load wall chart which is of application to machine loading in machine shops, planning of movements in engine repair shops, running sheds and so on. This development enables all kinds of states, activities and processes to be built up quickly and easily, and altered with equal facility.

Although designed for such engineering applications as machine loading, planning and progress, the Movigraph Time Load

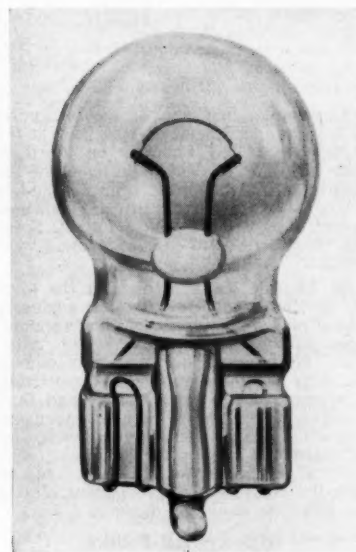


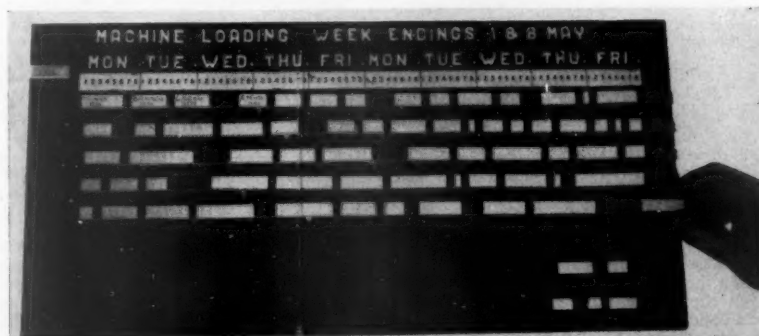
Chart is adaptable to other uses. The basis of the chart is a small interlocking plastics signal, which is oblong in shape and measures ½ in. x ¼ in. The signals interlock to form a continuous line; this line represents a certain phase or state.

Although easily attached to and detached from each other, these signals hold together quite firmly. As the signals are available in several colours, different indications may be made. Each signal has a small plug on its reverse side, fitting into an extruded channel screwed to the face of a standard Movigraph panel which consists of a perforated plastics board.

These time-load channels can be fitted to the panel horizontally or vertically, so that spare lines of perforations are visible between each. This enables the signals to be inserted in the perforations to indicate certain information such as causes of delay, or priorities. Special pencils can be used to write on the signals so that details may be recorded and deleted when the information is no longer required.

Because the information is presented clearly, it may be easily photographed, so that a permanent record of the state or process which it is recording can be kept. Charts can be supplied according to the size and type of application required.

The price and delivery details will be quoted on receipt of details of requirements by the distributor, Adapta-Charts Limited, 129, Hammersmith Road, London, W.14.



## Institution of Locomotive Engineers' Annual Luncheon

*Need for engineers to play a greater part in management*

The annual luncheon of the Institution of Locomotive Engineers was held at the Dorchester Hotel, London, on April 5, with Mr. J. F. B. Vidal, President of the Institution, in the chair. Sir J. Landale Train, Member of the British Transport Commission, was the principal guest. Some 620 members and their guests were present.

Sir Landale Train, proposing the toast of the Institution, stated that engineers should play a greater part in management, more particularly in the transport industries. He pointed out that professional engineers had the advantage of associating with employees in lower grades and thus acquiring a firm knowledge of managing men while retaining the human touch, and expressed the belief that the junior professional engineer would be encouraged to enter the industry if more opportunities in this direction could be made.

### Engineers and Politics

Mr. Vidal, responding, congratulated Sir Landale Train on speaking up for the engineer and encouraging an improvement in his status. He believed that the engineer of the future would need to be more aware of, and interested in, political questions as they affected his profession and his work, and in the arts, and he cited Lord Mills, the Minister of Power, who was present, as an example of what he had in mind. He expressed his full confidence in Lord Mills's ability to produce the extra supplies of raw materials and power which this country needed in the future.

### Revision of By-laws

Mr. Vidal then appealed for more members to present papers to be read to the Institution to help "spread the science and practice of locomotive engineering in the widest sense." The Council, he added, hoped that the number of students, a grade of membership now provided for by recent revisions of the Articles of Association and by-laws of the Institution, would be increased by the time that the 50th anniversary of the Institution was celebrated in 1961. These revisions include re-definition of the scope of the Institution, which is shown as embracing all forms of railway mechanical engineering.

At the suggestion of Mr. Vidal, a short period of silence was observed for those present to think of friends absent overseas.

Mr. A. W. Manser, Vice-President of the Institution, proposed the toast of the guests. He pointed out that the gathering included representatives of the growing group of railway engineers who were having to embrace two branches, mechanical and electrical engineering, in view of the increasing use of diesel and electric motive power by railways.

### Appeal for Good Design

Mr. R. F. Hanks, Chairman of the Western Area Board, British Transport Commission, in his reply expressed the hope that locomotive engineers would realise that they were being closely watched by millions of railway enthusiasts, and asked for designs, particularly of diesel and electric locomotives, which would have "appearance appeal"; a lesson, he believed which could be learned from the motor industry, with which he was connected, in building "ugliness which is streamlined." Spiritual value was

gained, he remarked, where even a diesel shunting locomotive was adorned with a steam-type chimney.

The President then presented Sir William A. Stanier, a Past President, with the Gold Medal of the Institution, its highest award, in honour of his outstanding contributions to British locomotive design and practice.

Sir William Stanier referred in his reply to remarks made by Mr. P. Masefield, managing director of the Bristol Aeroplane Co. Ltd., that there was no better way of conveying passengers between the centre of London and London Airport than by a railway.

Finally, Mr. Vidal introduced Mr. E. S. Cox, Mechanical Engineer (Development) British Railways Central Staff, British Transport Commission, as next President of the Institution. Mr. Cox thanked the members for the honour they had shown him.

Among those present were:—

Messrs. W. J. Abrahams, E. A. Adams, J. M. Adams, W. M. Adey, W. A. Agnew, J. F. Alcock, L. B. Alexander, I. Allan, E. L. Allen, W. F. Allen, E. Allsop, C. G. Anderson, H. Andrew, B. W. Anwell, J. Clubley Armstrong, R. I. D. Artherton, W. J. Ash, G. A. Ashton, Lt.-Colonel C. R. Atkins, Messrs. C. R. Atkins, C. E. Atkinson, R. Atkinson, R. M. Atkinson.

Messrs. B. Baker, J. Baker, S. E. Baker, D. Ball, E. V. Barker, D. Barnden, G. M. Barrett, D. S. M. Barrie, J. A. Barstow, G. J. Barton, H. H. C. Barton, L. C. Base, A. E. Bates, H. Bayley, J. E. Beckett, R. A. Beckett, M. Beevor, H. Bennett, J. P. Bennett, A. W. Berry, G. F. E. Best, G. S. Bingham, C. K. Bird.

Messrs. C. I. Birkbeck, R. W. Black, C. N. Blakeney, R. W. Boardman, A. B. Boath, G. H. E. Bond, R. C. Bond, Sir Archibald J. Boyd, Messrs. A. S. Bramworth, J. K. Bridcut, Sir George Briggs, Messrs. H. R. Broadbent, W. B. Broadbent, K. P. Brockway, A. Kendall Brooke, J. A. Broughall, A. F. Brown, A. J. S. Brown, D. C. Brown, D. L. Brown, E. R. Brown, H. Brown, H. Leslie Brown, L. Brown, T. W. Brown, A. W. Browne, J. G. Bruce, P. J. Buchanan, R. Bugler, C. F. Bullard, P. Bulteel, Colonel Bullen.

Messrs. M. G. Burnett, J. Burnham, M. G. Burrows, T. K. Burrows, J. N. Busk, F. B. Butler, H. L. Butler, B. R. Byrne.

Messrs. N. G. Cadman, K. R. M. Cameron, A. Campbell, R. M. Campbell, W. M. Cann, J. H. Cansdale, K. Cantlie, E. J. Card, D. H. Cardew, D. R. Carling, G. Carr, J. W. Carswell, H. D. Carter, H. R. Carver, E. Y. Caswell, J. Cave, W. W. A. C. Chalmers, E. E. Chapman, T. R. Charlesworth, H. Cheetham, A. H. Chilton, T. E. Chrimes, E. F. Clark, Colonel H. E. Clark.

Messrs. E. Claxton, W. W. W. Clayton, A. S. Clegg, H. Clements, C. M. Cock, C. S. Cocks, G. Cocks, P. J. Collinet, G. Collingwood, C. E. Collins, L. Collins, W. B. G. Collis, J. N. Compton, H. C. Conroy, C. G. Conway, K. J. Cook, L. S. Cook, B. W. C. Cooke, D. F. Cooper, J. Cooper, R. S. Cooper, S. E. Copen, Sir Claude Core.

Messrs. G. J. Corson, E. S. Cox, John Craig, M. A. Crane, W. A. L. Creighton, W. N. Crimp, O. J. Crompton, P. Croom-Johnson, T. A. Crowe, N. Crump, R. Curl, G. R. Curry, J. B. Curry.

Messrs. M. H. Dale, A. C. C. Damant, H. M. Dannatt, E. O. Daum, S. C. Davey, A. S. Davidson, E. Davies, H. Davies, G. V. Davy, A. L. B. Dawson, C. R. Dawson, Damer Dawson, L. F. Day, S. R. Devlin, F. Dickson, V. F. Dittrich, W. H. Dixon, R. H. Dobson,

J. E. Dodsworth, R. E. Dore, R. N. Dorey, G. Dow, G. H. Dowsett, P. H. S. Drew, J. P. A. Drewry, R. J. Drury, J. W. Duggan, C. E. Dunton.

Messrs. H. J. Ebner, E. R. Edwards, L. S. Edwards, F. O. Ellis, G. E. Embleton, A. H. Emerson, J. A. Esplin, E. M. Eustace, J. H. Evers.

Messrs. C. Fawcett, W. Featherstone, Lt.-Colonel L. F. R. Fell, Messrs. E. Fenske, A. D. Ferguson, J. W. Ferguson, S. L. Finch, J. J. Finlayson, J. W. M. Fitt, L. N. Flatt, J. Fleming, R. E. Fordham, B. G. V. Forman, I. C. Forsyth, H. C. Foster, R. Freeman, D. W. Frew, A. E. Frost, C. R. Clayton Fryers, W. J. Fulwell.

Messrs. E. P. Gabriel, C. A. Gammon, M. A. Gardiner-Hill, Viscount Garnock, Messrs. J. B. Gascoyne, H. F. S. Gedge, A. J. Gibson, C. Gibson, J. L. Gilbert, R. K. Glascoine, G. Godfrey, G. C. Gold, R. Gordon, T. E. Gould, T. W. Gould, A. H. Grainger, P. Gray, E. W. Greaves, H. Green, T. E. Green, T. Greenwood, Lt.-Colonel H. Gresham.

Messrs. R. Gresley, J. Grieve, J. R. Grimsdell, J. A. P. Grose, G. Grubb, R. L. Guest, J. Hadfield, Sir Arnold Hall, Messrs. T. O. M. Halliday, G. Wynn Hamel, J. Hamilton, R. F. Hanks, J. Hannah, E. W. Hanslip, H. S. Hanson, F. D. M. Harding, L. W. Harding, N. Hargreaves, C. G. Harrison, J. F. Harrison.

Messrs. G. T. Hart, R. Hart-Davies, R. F. Harvey, R. J. Harvey, E. G. Hassell, C. A. F. Hastilow, M. S. Hatchell, S. G. Hearn, C. H. Heavey, R. J. P. Heck, A. Henderson, R. Henderson-Tate, M. A. Henstock, J. L. Hewitt, F. A. Hewson, W. E. Hicks, G. R. Higgs, J. Hill, C. R. Hinds, A. J. Hirst, A. E. Hoare, H. W. Hobbs, E. J. Hobbs, R. G. Hodges, R. B. Hoff, S. Hogg, H. Holcroft, J. Holmes, A. Hood, A. G. Hopking, F. E. Hough, F. A. Howard, J. B. S. Howard, R. Howard, T. G. Howard, E. P. Hubbard, J. T. Hudson, A. Hufnley, J. O. P. Hughes, T. R. Hume, W. H. Hyde, C. G. T. Hyslop.

Messrs. B. G. Illingworth, F. B. Illston, C. C. Inglis, J. W. Innes, H. G. Ivatt, K. T. Ivy, F. H. Jaekel, G. E. R. Jarman, J. M. Jarvis, A. E. Jefferd, A. Johnson, J. D. Johnson, N. Johnson, J. J. Johnston, A. Jollie, E. L. Jones, R. Stephenson Jones, R. W. Jones, W. L. Jones, S. Jones-Frank.

Messrs. S. P. Kay, L. M. Keegan, J. V. Keene, W. G. Kefford, W. Kelway-Bamber, E. Kent, E. H. Ker, J. W. G. Kershaw, K. C. Khosla, G. G. Kibblewhite, R. D. Kimberley, A. S. King, W. A. Kinsman, L. Kitson, C. T. Klapper, R. P. Knight, J. P. Koster, D. Kyle.

Messrs. D. R. Lamb, T. T. Lambe, A. Lamm, E. A. Langridge, T. S. Lascelles, E. Lawton, H. Lawton, L. Ledger, Sir Frank Lee, Messrs. K. H. Leech, F. D. Lester, M. H. P. A. Levie, O. M. Lewin, Martin Lewis, S. Lewis, L. E. Lightowler, A. B. Lloyd, J. H. P. Lloyd, M. C. Lloyd, M. A. Lockhart, S. N. Loosen, F. Lord, J. K. Lord, S. E. Lord, W. D. Lorimer, E. D. Lottin, M. D. Lowndes, E. P. Lumley, F. C. Lynham.

Messrs. W. H. Maass, C. A. MacKey, C. Macdonald, A. B. Macleod, A. H. Madden, L. T. Madnani, C. U. Magnusson, J. Pelham Maitland, N. W. Manby, A. W. Manser, W. E. Marrian, R. F. Marriott, G. C. Marsh, S. W. Marsh, E. K. Marshall, K. C. T. Marshall, E. W. Marten, F. Mason, Sir Ronald Matthews.

Messrs. H. W. Maye, W. McCraith, Captain McCrum, Messrs. J. McGuigan, A. J. McGuire, D. McKenna, W. McKie, A. J. McLeod, E. Mead, H. Melhuish, L. Melhuish, A. E. Merryweather, B. I. Metcalfe, J. P. Metcalfe, R. Metcalfe, P. Middlemas, T. C. B. Miller,



Lord Mills, Messrs. W. J. Mitchelhill, R. C. Molland, Lord Monkswell, Messrs. W. J. Moodie, E. S. Moore, L. L. Moore, I. T. Morrow, W. H. Morton, C. Muirhead, F. T. Muncey, J. B. L. Munro, R. L. Murray, C. S. Naylor, G. H. Negus,

Sir George Nelson, Messrs. H. H. J. S. Nelson, R. E. Nelson, J. Ness, S. Newman, H. Newsam, N. Newsome, J. C. Nisbet, W. F. Noble, O. S. Nock, G. E. Norris, L. B. Norrish, Captain A. R. S. Nutting.

Messrs. W. R. Oaten, J. H. Onions, E. C. Ottaway, J. R. H. Otter, G. T. Owen, J. E. Owston.

Messrs. A. H. C. Page, P. S. Palmer, C. R. Parker, A. J. Parsons, C. R. Pasley, Dr. W. L. Patrick, Messrs. I. K. F. Pearson, R. Pearson, C. Peebles, A. F. Pegler, C. H. N. Peirce, S. Perry, G. Pettigrew-Smith, P. G. C. Peyton, H. H. Phillips, M. F. Phillipson, W. Pickett, H. T. Pilot, S. J. Pinto, D. C. Plyer, S. Potter, T. Potter, R. A. Powell, V. R. Prehn, Kenneth H. Preston.

Messrs. B. Rackstraw, H. W. Ralph, B. C. Randall, J. Ratter, G. Read, W. E. A. Redfearn, M. W. T. Rees, A. Reidinger, W. Rhodes, G. M. Rial, R. L. Ribbons, R. A. Riddles, G. Rigby, J. L. Riordan, B. G. Robbins, F. B. Roberts, G. T. Roberts, A. S. Robertson, D. J. C. Robertson, A. E. Robson, J. R. Rohman, C. F. Rose, F. B. Rose, J. Rostron, R. Rushmere, C. F. Ryan.

Messrs. L. I. Sanders, J. E. Sandham, S. H. Saunders, M. Sanderson, Sir Alfred Savage, Messrs. M. Sawyer, N. Schofield, S. Schofield, T. Schur, J. I. Scott, J. S. Scott, Dr. T. Scott-Glover, Mr. P. C. Searle, Sir George Seel, Messrs. C. A. Shepherd, F. E. Sheppard, F. Shore, E. A. Short, H. A. Short, M. W. Shorter, J. D. Shukla, L. Sibbit, E. M. Simmonds, A. W. Simmons, G. S. Simmons, A. P. W. Simon, C. R. H. Simpson, E. S. Simpson, G. H. Simpson, Colonel J. R. Simpson,

Messrs. J. O. Sims, F. W. Sinclair, Sir Leonard Sinclair, Messrs. W. O. Skeat, R. A. Smeddle, C. Leslie Smith, F. W. J. Smith, J. W. Smith, J. W. Eling Smith, W. Gilmour Smith, G. T. Smithyman, W. A. Smyth, H. S. Smythe, A. H. Sommer, B. Spencer, J. C. Spencer, F. L. Stafford, Sir William A. Stanier, Messrs. E. Stanley, C. A. Stead, R. R. Stephens, P. W. Stevens, A. V. Stewart, W. Stewart, R. Stockings, D. T. Strain, H. J. Stretton, H. S. Stubbs, L. J. Styles, T. H. Summerson, A. Sykes, W. J. A. Sykes, A. Szold.

Messrs. C. F. Taft, P. N. Tarleton, V. Tarnowiecki, A. T. H. Taylor, A. W. F. Taylerson, Major E. W. Taylerson, Mr. G. H. Taylor, Sir John Taylor, Messrs. G. Tew, F. Theakston, M. J. Theakston, D. R. Thomas, G. Thomas, R. Thompson, W. E. Thompson, W. T. Thompson, Group Captain P. G. Thompson, Messrs. T. B. L. Thomson, N. Thorneley, P. W. Thornhill, J. Thorpe, N. E. Tildesley, R. Tildesley, W. L. Topham.

Major E. B. Todd, Sir J. Landale Train, Messrs. C. L. Trask, E. D. Trask, Julian S. Tritton, A. Trow, A. Turner, F. Turner, R. M. Tyrrel, W. Vandy, Lt.-Colonel C. E. Vaughan, Messrs. J. F. B. Vidal, R. G. Voysey,

Messrs. C. C. Waddington, C. C. H. Wade, F. Wakefield, W. J. Wakley, C. Walford, G. Walker, S. Walker, G. A. Wallace, A. F. Walters, J. R. Walton, Major-General L. L. Wansbrough-Jones, Messrs. R. W. Ward, S. B. Warder, W. Watson, W. L. Watson, F. J. R. Watts, S. G. Watts, J. C. Way, W. H. Webb, D. Wells, E. D. Wells, F. A. West, J. Whatmough, F. M. G. Wheeler, H. A. A. White, E. T. White, H. B. White, S. White.

Messrs. F. Whyman, R. G. Wickham, H. Wilcock, R. S. Wild, A. V. Wilkin, A. Williams, G. Williams, W. Cyril Williams, H. Wilmot, E. J. Wilson, T. E. Wilson, W. H. Wilson, A. J. L. Winchester, J. P. Winder, G. Witton, G. F. Wix, H. Wolstenholme, F. H. Wood, J. A. Wood, D. G. Woodman, M. G. Young, B. Zavatarelli, M. Zublin.

## A.E.I. Electrification Contracts

At the annual general meeting of Associated Electrical Industries Limited on April 3, Lord Chandos, the Chairman, stated that the increasing demand for diesel-electric and electric traction has obliged the company to build a new factory at Sheffield. This was necessary because it was the largest supplier of traction equipment in the United Kingdom, and the order book had recently been enlarged by further orders from the British Transport Commission. The building is only just begun, but when completed it will give a great increase in capacity for the manufacture of traction motors.

The *Annual Review* of the activities of A.E.I. issued last week, contains an article by Mr. J. C. Way, Manager, Traction Sales, Metropolitan-Vickers Electrical Co. Ltd., on the part played by A.E.I. in railway electrification. He points out that the British Thomson-Houston Co. Ltd. germanium power rectifier, successfully tested in a motor coach on the Lancaster-Morecambe-Heysham line, was the world's first for railway service. Thirty-five motor coaches ordered as part of the new B.T.C. programme will be equipped by B.T.H. and with germanium rectifiers. A prototype of Metropolitan-Vickers 50-cycle a.c. traction equipment will soon be in experimental service and the company is to supply 91 motor coach equipments for the Glasgow suburban lines.

Metropolitan-Vickers-GRS manufactures all types of railway signalling and also is involved in the new electrification schemes. Already it is to convert the signalling on two Eastern Region sections as well as supplying a new installation at Temple Mills West.

## L.T.E. Control Equipments

Apart from pioneer work on high-voltage electric traction, A.E.I. companies have continued to supply diesel-electric and electric locomotives and multiple-unit trains. During the year, B.T.H. supplied 15 electro-pneumatic control equipments for experimental trains for the London Underground and a further 64 are being made, bringing the total supplied during the last 20 years to some 1,400. A new control unit, cheaper and easier to maintain than the existing type, has proved itself and five more are being made in order to equip a complete train.

The Toronto Subway is another underground railway using B.T.H. equipment. Twenty-eight sets have been supplied during the year, bringing the total to 132 and a further six equipments with rheostatic braking are being built for trials, before further extensions to the Subway.

B.T.H. equipment also powers diesel-electric shunting locomotives and further orders have been received during the year from Ruston & Hornsby Limited and the Yorkshire Engine Co. Ltd.

## Locomotives for Australia

Metropolitan-Vickers is maintaining a long association with the Mersey Railway by supplying electrical equipment for 24 new trains for this line. Another long association, with the New South Wales Government Railways, is also being maintained, for Metropolitan-Vickers is supplying 40 3,820-h.p. locomotives for the Blue Mountains electrification scheme. These 108-ton locomotives are the most powerful this country has produced and already 23 have been despatched. It is also supplying equipment for the Sydney suburban railways and has completed delivery of 48 diesel-electric locomotives for the Western Australian Government Railways.

Nearer home, 60 85-ton diesel-electric locomotives have been despatched to Eire. A further 34 locomotives are now being delivered and together these represent the largest single order for such locomotives to be placed in Great Britain.

Multiple-unit trains are being supplied as part of a £7 million contract received from Brazil. To India, Metropolitan-Vickers-GRS has supplied signals, indicators, and other essential signalling equipment for use on the railways around Calcutta and Bombay. For South Africa, signalling equipment is being built for three stations near Johannesburg.

## Radio Equipment for Parcels Vans

The Eastern Region has decided to retain as a permanency the two-way radio equipment between the driver and his depot fitted to its road parcels vans at Norwich, after successful experiments recently carried out in the area. It has also been decided to extend the facility gradually to parcels vehicles at other provincial centres throughout the Region.

Although the equipment makes possible diversions in the van round for last-minute collections of parcels, it is not intended to replace the existing system where customers give notice in the usual manner that parcels require collection, but is envisaged as a means of maintaining close contact with the van drivers and through them with their customers, so that unexpected circumstances can be dealt with.

## Special Help to Customers

The Region feels that the radio link will be helpful to customers and will greatly assist when special circumstances arise which justify vehicles being diverted to a special task. Customers are, however, being asked to use the usual system of notification in all normal circumstances, otherwise the advantages offered by the radio link as an emergency service may be lost.

The illustration shows a driver in contact with his headquarters by means of the two-way radio fitted to his vehicle.



View of cab of parcels van showing part of transmitter receiver equipment mounted under dashboard

## Parliamentary Notes

### Electricity for Railways

On Report stage consideration of the Electricity Bill in the House of Commons on April 3, Mr. Reginald Mauding, the Paymaster-General, brought forward a new Clause of nine sub-sections proposing that it shall be the duty of the Generating Board to provide in England and Wales, and of the Scottish Electricity Boards to provide in their respective districts, a supply of electricity to meet the requirements for haulage or traction of railway undertakers.

Mr. Mauding, moving the second reading of the Clause, said there were two reasons for changing the existing statutory provisions. The first was that Section 49 of the principal Act needed some amendment to bring its provisions into line with the changed constitution of the electricity industry as a whole. The second reason was that Section 49 declared that the Ministers responsible should lay down regulations determining the terms and conditions under which power is supplied by the national electricity authorities to the railways. In practice, it was found impossible to draw up suitable regulations for the reason that if the regulations were detailed enough to have practical effect they might be ultra vires, while if they were broad enough to be intra vires they would do little more than say that the Minister approved the agreement reached between the parties themselves.

They were now approaching the problem in a slightly different fashion. Clause 1 provides that the Generating Board can supply electricity for traction to railways in Scotland in agreement with the Scottish Boards and vice versa. In certain circumstances, the area boards shall be able to provide power to a railway undertaker, but they cannot do it without the express approval of the Generating Board. No area board may overlap its own area other than by agreement. In place of regulations in the main Act, it is provided that the terms and conditions on which electricity shall be supplied to the railways shall be agreed between the two parties concerned, and only in default of agreement shall the appropriate Ministers give a determination. "In other words, boards shall not be called upon either by agreement or by determination to provide an electricity supply to the railway undertakings at a loss."

Mr. C. Hobson (Keighley—Lab.) said he could not see why the B.T.C., which would buy in bulk millions of kilowatts, because of the electrification programme for the main lines, should not be able to put in appropriate transformers for the works at Crewe, Derby, or Darlington. Why should not the same tariff apply? Why should the Commission have to have separate agreements, presumably with the area boards, for electricity supplies for its workshops? That seemed to be entirely wrong. Once a bulk agreement had been agreed between the Generating Board and the B.T.C., he should have thought it would not have been found necessary to have separate agreements with the various area boards. London Transport had three stations generating electricity for London Transport underground railways, and it also supplied electricity for the workshops at Neasden and elsewhere. It did not lose by having to buy electricity from the London Electricity Board to power workshops. That arrangement was not being forced upon London Transport.

Mr. Mauding said in this matter the

Government was following the Act of 1947, which provided, and, he thought, rightly, that when there were special provisions for the supply of electricity to the railways for haulage purposes, that special provision should not extend to other purposes. He did not see why for other purposes the railways should not get their electricity by agreement with the suppliers in the same way as any other consumer of electricity did.

Mr. Hobson said other suppliers would not have to get two separate sets of agreements for the same works.

Mr. Mauding: There is no need to have separate agreements. The Clause said that this shall be done primarily by agreement between the electricity and the railway people. That part of the 1947 Act from which there was now a departure said that regulations should be made by the Minister to deal with electricity supply for haulage or traction, and that electricity for other purposes shall be supplied by agreement.

"We are saying," added Mr. Mauding, "that there shall be agreement between the two parties about all electricity supply, and only when there is disagreement shall the Minister come into it. When that happens, any Ministerial settlement of the dispute shall apply solely to the electricity supplied to the railways for traction and haulage, and for other electricity, the parties shall, as now, reach agreement in the normal course, as do other customers."

Mr. Arthur Palmer (Cleveland—Lab.) said it was noticeable that in the event of the Ministers or the Government making the determination, there was the proviso "that any terms and conditions so agreed or determined shall be such as, in the opinion of the Board, or of the appropriate Ministers, as the case may be, will not cause a financial loss to result to the Board from the provision of the supply." There was no suggestion that it should show a profit to the electricity board. He suggested that this was not quite so open an arrangement—perhaps unavoidably so—as the earlier one, under which regulations which were subject to scrutiny had to be made, because it was just possible that it might suit a Government to provide, in a rather under-cover way, a subsidy to the railway undertakings from the boards.

Mr. Mauding said the sub-section was an exact copy of the 1947 Act provision.

The Clause was read a Second time and added to the Bill.

## Questions in Parliament

### Automatic Train Control

Lord Balneil (Hertford—C.) asked the Minister of Transport & Civil Aviation on April 3 when he expected to introduce automatic train control for railway traffic passing through Welwyn Garden City.

Mr. Geoffrey Wilson (Truro—C.) asked what progress was being made with the extension of automatic train control throughout the railway system of British Railways.

Mr. Harold Watkinson, replying to both questions: As I informed the House on February 13, I gave my final approval to the British Railways automatic train control system on November 30 last. The B.T.C. is now going ahead with its plans to provide the equipment as quickly as possible on all the main traffic routes, including the main line through Welwyn Garden City.

Later, he said that the B.T.C. placed the utmost priority on trying to get A.T.C.

going as quickly as possible. He would see that more locomotives were equipped to use the system where it was installed.

### Signal at Welwyn Garden City

Lord Balneil (Hertford—C.) asked the Minister of Transport & Civil Aviation in the House of Commons on April 2 whether his attention had been drawn to departmental correspondence at Kings Cross, quoted by Lt.-Colonel Wilson, Minister of Transport inspector, at his inquiry, which stated that signal failures at Welwyn were getting all too frequent; and whether, in view of local concern, he would make a statement on the recommendations which are to be made.

Lord Balneil also asked the Minister, pending the report of his departmental investigation into assertions by four train drivers that a signal at Welwyn Garden City gave a false clear on several occasions, what special steps were being taken to ensure the safety of railway traffic passing through Welwyn Garden City.

Mr. Harold Watkinson in a written reply to both questions: I am aware of the statements at the resumed inquiry of the Chief Inspecting Officer of Railways into the accident at Welwyn Garden City on January 7. I am also aware of an allegation by an engine driver that he had received a false clear indication at the Welwyn Garden City up main outer distant signal, and that this driver had referred to similar experiences at this signal by other drivers. The Chief Inspecting Officer is investigating whether there is any truth in these allegations, but I cannot anticipate the findings of his report, which will be published as usual as soon as it is ready. I can, however, say that thorough and prolonged tests and examinations of the signal and its associated equipment have not disclosed any fault which might conceivably have caused a false clear indication.

Notwithstanding the outcome of these tests, the precaution has been taken of installing a special indicator in Welwyn Garden City signal box which will warn the signalman at once if a false clear indication should be displayed.

## Staff and Labour Matters

### Railway Footplate Staff

The British Transport Commission on April 6 announced that despite further negotiations it had been unable to secure the agreement of the A.S.L.E.F. on the improvement of wages of footplate staff employed on British Railways coupled with a declaration in regard to measures for increasing the efficiency, productivity, and stability of the railway industry.

As previously announced the Commission reached such agreement with the N.U.R. and the T.S.S.A. on March 22 and 27 respectively. Under this agreement all railway staff were given a 3 per cent increase in rates of pay from November 26, 1956, and an increase of 5 per cent in substitution for the 3 per cent has been applied as from March 4, except to footplate staff, who were granted a 3 per cent award by the Railway Staff National Tribunal last November.

The representatives of the A.S.L.E.F. so far have declined to subscribe to the terms of the agreement reached with the other two unions, and have shown themselves willing to consider only a brief declaration in general terms with regard to increasing productivity—excluding all reference to particular matters which are of great

importance in connection with the modernisation of British Railways, and making no mention of the possibilities of periodic reviews of factors affecting remuneration and conditions of the staff as a means of escaping the difficulties created by recurrent and uncoordinated wage claims.

The Commission states that, having given the A.S.L.E.F. every opportunity and ample time to join in an agreement similar to those concluded with the other two unions, it has now decided to implement its agreement with the N.U.R. in full. This means that it has arranged to apply to all footplate staff increased wages in accordance with the agreement made between the Commission and the N.U.R. It is not practicable, it is stated, to distinguish between individual members of the staff according to the unions to which they belong. The Commission has also had regard to the co-operation it is receiving from the men themselves and does not desire to penalise particular members of a loyal team, because of a failure to reach agreement with one union.

The Commission expresses the hope that, in the forthcoming discussions of the problems of efficiency and stability to which the agreements with the other two unions have referred the A.S.L.E.F. will make a practical contribution, and so permit the restoration of a normal and harmonious relationship between the Commission and all three unions representing the staff on British Railways.

## Contracts and Tenders

The British Transport Commission has placed contracts to the value of nearly £1,000,000 with the British Thomson-Houston Co. Ltd. covering switchgear and high-speed circuit-breakers required for the electrification of Kent Coast lines of the Southern Region of British Railways. The equipments will be installed in 31 substations in the East Kent area.

British Railways, Eastern Region, have placed the following contracts:—

Charles R. Price, Doncaster: reconstruction of goods shed at Market Rasen

Pitchers Limited, London, N.7: repairs and alterations to 222, Marylebone Road

J. Jeffreys & Co. Ltd., London, S.E.1: supply, delivery and erection of boiler plant heating system, oil storage equipment and all piping at Stratford Diesel Lightweight Train Depot

E. C. & J. Keay Limited, Henley-in-Arden, nr. Birmingham: supply and delivery of structural steelwork in connection with reconstruction of engine shed at Barrow Hill and Staveley Motive Power Depot

Fletcher & Co. (Contractors) Ltd., Mansfield: repairs to arches Nos. 81 and 82 of bridge No. 39, Frodingham Viaduct between Althorpe and Scunthorpe

Couzens & Akers Limited, Manchester, 3: supply, delivery and installation of boiler plant heating system oil storage equipment and all piping at Cambridge Diesel Lightweight Train Depot

British Railways, Southern Region, have placed the following contracts:—

The Butterley Co. Ltd., Butterley, nr. Derby: constructional steelwork, Mill Stream bridge, Yeovil Pen Mill

R. Mansell Limited, Croydon, Surrey: alteration works, Crystal Palace Low Level Station

Aubrey Watson Limited, London, S.W.1: new workshop, Feltham

P. & M. Contractors Limited, London, S.W.1: renovations, Coulsdon North Station

Mears Bros. (Contractors) Ltd., London, S.E.26: reconstruction of cargo shed, Newhaven Harbour

Caffin & Co. Ltd., London, W.C.2: new mess room accommodation, repair and inspection depot, Durnsford Road

A. Bagnall & Sons Ltd., Teddington, Middx.: renovations, carriage repair shed, Selhurst

J. B. Edwards & Co. (Whyteleafe) Ltd., Kenley, Surrey: retaining wall, Battersea Pier Junction

R. Robinson & Co. (Contractors) Ltd., London, S.W.1: reconstruction, Poole River bridge, Lower Sydenham

Dorman Long (Bridge & Engineering) Ltd., Luton, Beds: reconstruction, Limpsfield Road bridge and Barrow Green Lane bridges, Oxted.

The British Transport Commission, South Wales Docks, has placed the following contract:—

Kendall and Gent Limited: supply and delivery of screwing machine, central workshops, Cardiff Docks.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the Directorate General of Overseas Development has called for tenders for the supply of 50 open drop-side wagons of 22 metric tons capacity for the Mormugao port and railway in Portuguese India.

Tenders will be opened on May 27 next at the offices of the Directorate, at 13 Praça do Principe Real, Lisbon, and on the same day at the Inspection Service of the Mormugao port and railway at Goa, Portuguese India. For tenders to be admitted a provisional deposit of Esc. 200,000.00 (£2,500) must have been made with the Banco Nacional Ultramarino up to two days before the date mentioned above. The deposit may be substituted by an approved bank guarantee. No further information is available at the Board of Trade about this call for tenders. If and when tender documents are received these will be available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/8316/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that Mr. Kenneth Brough of K. Brough & Company, P.O. Box 2455, Johannesburg, is in this country for a stay of about three weeks, and is interested in obtaining new agencies for railway equipment and engineering supplies in general.

An assistant and Mr. Brough together cover the Witwatersrand, and he has sub-agents in the other main centres of the Union which he visits several times a year. Since he is purely a commission representative he has distributors throughout the Union for the various products he represents. K. Brough & Company are considered to be a suitable connection for United Kingdom firms. Manufacturers interested in this agency enquiry should write to Mr. K. Brough, c/o Export Services Branch, Room 732, Lacon House, Theobalds Road, London, W.C.1, quoting reference ESB/8726/57. It would be appreciated if they would also copy letters

to the Branch so that they may assist in arranging for Mr. Brough to call on them.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from Uruguay for spare parts for steam locomotives, including cast steel cross-heads, connecting rods, and axles.

The issuing authority is the Administracion de Ferrocarriles del Estado. The tender No. is 301/57. A guarantee of Ur. \$1,200 is required for maintenance of offers. The closing date is April 23, 1957. A copy of the specification in Spanish, with drawings, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). Local representation is essential. Offers must not be submitted direct from the United Kingdom to official or semi-official Uruguayan organisations. The Branch will, on request supply the names of firms who have expressed their willingness to act on behalf of United Kingdom firms. The reference ESB/7916/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for vacuum brake release valves as follows:—

4,500 release valves  $\frac{1}{2}$  in. single branch (C. & W.), complete with all parts as shown on the drawing and listed thereon excluding the wire, to I.R.S. drawing No. VBA-50 Alt. 1 and to IRSS No. R.3/53 and as shown on part drawings

1,200 release valves  $\frac{1}{2}$  in. double branch round flange for "F" type C. & W. cylinders, complete with all parts shown on the drawing, excluding the wire, to I.R.S. drawing No. VBA-53, Alt. 1 and to I.R.S. specn. No. R-3/53 and as shown on part drawings

The issuing authority is the Director-General of Supplies and Disposals. The tender No. is SRIA/RC/4209/II. Bids should be sent to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is April 26, 1957. A set of tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). A photo-copy set can be purchased from the Branch for 16s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. The reference ESB/7953/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for axleboxes as follows:—

140 axleboxes, cast steel, No. 15, body only, to ex-B.B. & C.I. Rly. Loco. drg. No. 31-92 (D.G.S. & D. No. 13195) and I.R.S. specn. No. M.2/48 class "A" grade 2

The issuing authority is the Director General of Supplies and Disposals. The tender No. is P/SRI/16729-G/1. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is April 17, 1957. A set of tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). Local representation is essential. The reference ESB/8168/57 should be quoted in any correspondence with the Branch.



## Notes and News

**Collision Near Cape Town.**—One of the most serious accidents in South African railway history occurred on April 8 when two electric passenger trains collided at Woodstock, near Cape Town. Reports as we went to press indicated that at least 20 people were killed and 45 injured.

**Higher Railway Charges in Spain.**—It has been reported in Madrid newspapers that railway charges in Spain for passengers and freight have been increased by 35 per cent from April 1. It has been pointed out that the changed tariffs will not have the effects on living costs that some people expect. Spanish railway charges have been among the cheapest in Europe.

**British Railways National Savings Committees.**—Area committees to encourage National Savings and membership of savings groups among railwaymen are now operating at Hull, York, Sheffield, Leeds, Doncaster, Middlesbrough, and Darlington. There are 1,940 National Savings groups, with a total membership of nearly 60,000, which enable employees of British Railways to save regularly. In Yorkshire, railway savings groups total 237, with a membership of 7,484.

**Peruvian Transport Corporation Results.**—The group revenue of the Peruvian Transport Corporation, including the operating surplus, after depreciation, of its principal subsidiary, the Peruvian Corporation, amounted, after deduction of accrued debenture interest, to \$425,579 for the six months ended December 31, which is only slightly in excess of the figure for the three months ended September 30, 1956. The absence of profit for the December quarter was caused by the incidence of strikes in that period, which were, however, settled before the end of the year. For the three months ended March 31 the railways have again operated with a surplus, but in the

absence of tariff increases, which have been made necessary by increased operating costs and were requested in June, 1956, the profit will be lower than for the same period in the previous year. Tariff increases have been authorised for passenger and goods traffic with effect from April 12 and May 2, 1957, respectively. These increases average 10 per cent and will have a material effect on the operating surplus for the three months ending June 30, 1957.

**More Vespa Motor Scooters for Western Region.**—After the successful experiment conducted by the Western Region of British Railways of providing Vespa motor scooters for the use of the goods agents at Bristol and Pontypridd, featured in our issue of September 14, 1956, a further six machines have now been purchased. Experience over the past six months has proved that these machines are most useful in maintaining speedy contact with traders, and enable agents and representatives to cover ground more quickly in their day-to-day work. Eight Vespas are now in use by goods agents at Bridgwater, Cardiff, High Wycombe, Leamington, Pontypridd, Stroud, Swansea, and Wrexham.

**Ninth British Electrical Power Convention.**—The theme of this year's Convention at Eastbourne is "Electricity in the National Economy" and 17 papers will cover aspects of this question including "Generation," "Transmission and Distribution," "Nuclear Energy," "Industrial Utilisation of Electricity," and "Houses into Homes." A main feature of the Convention will be the Electrical Exhibition, organised by the Electrical Development Association, which will cover an area of 32,000 sq. ft., including a main hall of 28,000 sq. ft. plus three supplementary buildings. About 70 manufacturers of electrical equipment and electrical organisations have taken space, and stands will occupy some 20,000 sq. ft. of the exhibition area. Features will include displays

of electric vehicles and heavy equipment. The exhibition will be officially opened by Sir Josiah Eccles, President of the Convention, on the evening of Monday, June 17. Admission will be reserved for delegates on Monday and Tuesday, June 17 and 18. The public will be admitted free of charge on the remaining three days of the week. Times of opening are as follows:—Monday and Tuesday: 10 a.m. to 6 p.m.; Wednesday and Thursday, 10 a.m. to 9 p.m.; Friday, 10 a.m. to 1 p.m. The exhibition will be closed daily between 1 p.m. and 2.30 p.m.

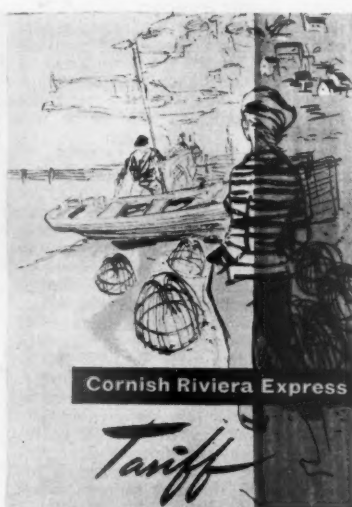
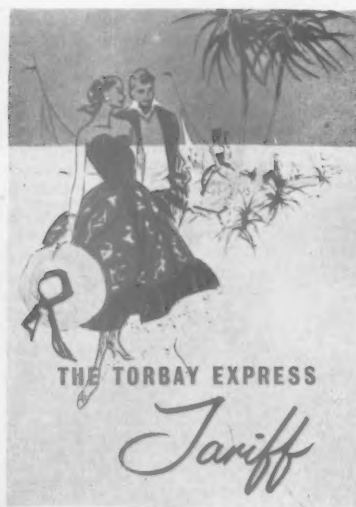
**London Transport Travel Survey.**—According to a survey carried out in Greater London during the spring of 1954, only 3 per cent of the people working in central London travel to work by car, while 91 per cent do so by public transport. The survey provides a comprehensive picture of the means, purpose, duration, and cost of journeys in and about London. It was carried out by the Social Survey (Central Office of Information) on behalf of the Road Research Laboratory, the British Transport Commission, and London Transport.

**North Eastern Region Essay Competition.**—The "Sir A. Kaye Butterworth" shield for the winning essay in the British Railways Federation of Railway Lecture & Debating Societies (North Eastern Region) 1956-57 Competition was presented recently in York by Mr. H. A. Short, General Manager, North Eastern Region, British Railways, to Mr. J. Joy of the Yardmaster's Office, Hull. Present at the ceremony was Mr. F. Grundy, Chief Traffic Manager, North Eastern Region, Chairman of the Federation. Other prize winners were Mr. M. W. Baxter, Chief Traffic Manager's Office, York, and Mr. C. Hill, Engineer's Accountant's Office, York.

**Recruitment of Graduates at Metropolitan-Vickers.**—An "open week" was held last week at the Trafford Park Works of the Metropolitan-Vickers Electrical Co. Ltd. when over 140 potential graduates from 23 colleges and universities throughout the country visited the Works. They had been interviewed earlier at their colleges in connection with the company's graduate training courses. During "open week" they were given a full opportunity of observing the training and career opportunities presented by the company. Daily visits to the general manufacturing shops and other departments were arranged, and details of the relevant engineering courses were explained to them.

**Cannon Street Signalbox Destroyed by Fire.**—The power-operated signalbox at Cannon Street station, Southern Region, was totally destroyed by a fire which broke out in the early hours of April 5. This box controlled all movements over Cannon Street bridge. The Southern Region states that it cannot be replaced to give full facilities until perhaps December next. Until that time a very restricted number of trains will use the station. Until early in May all trains entering or leaving the station will be hand signalled. Early in May it is hoped to bring into use a temporary power-operated signalbox, but its capacity will be very much less than that of the box destroyed. The temporary box will enable the present very restricted train service to be improved a little and this is now being planned. To ensure that the very limited capacity at

## Artistry in Western Region Dining Cars



Examples of coloured menu card covers in restaurant cars of Western Region expresses, with imaginative depiction of (left) Torquay or another Torbay resort and (right) a Cornish fishing port

Cannon Street is used for the benefit of the greatest number of people, and as electric trains can be handled at terminals with fewer signalling movements, steam business services previously using Cannon Street station are being diverted to and from Victoria. Details of the changed services have been made available at local stations and season tickets are being honoured by alternative routes. Cannon Street normally handles more than 70,000 passengers every weekday.

**British Railways at Schoolchildren's Exhibition, Glasgow.**—Careers on British Railways were featured on the stand supplied by the British Transport Commission and staffed by the Scottish Region at the recent Schoolboys' & Girls' Exhibition in the Kelvin Hall, Glasgow. The motif was the railway modernisation programme; staff at the Careers Section answered many enquiries, and gave guidance to school leavers and advice to parents. Entrance to the stand was through a small ticket office equipped with an Ultimatic ticket issuing machine, and exhibits included marshalling yards and a replica of the cab of *Duke of Gloucester* locomotive.

**Coaches Destroyed in Fire at Abergavenny.**—A fire in a carriage shed at Abergavenny Junction in the early morning on April 7 destroyed seven coaches and severely damaged three others. The shed roof was badly damaged and is to be demolished. The damage was estimated to amount to some £30,000. A police statement declared that an oil store had been entered and a 50-gal. drum of paraffin drained. At the entrance to the shed, large pieces of metal had been placed across the rails and a heavy jack had been screwed to the track where it would prevent the coaches from being drawn clear. A railway fireman made a formal appearance before a special court at Abergavenny on April 8 and was remanded in custody. He is charged with unlawfully and maliciously causing more than £20 of damage to railway carriages and buildings.

**Turner & Newall Reorganisation.**—The six home subsidiary companies have for many years operated as branches of Turner & Newall Limited, the parent company, under management agreements, the assets being vested in the parent company. The directors have now decided that for administrative reasons, and to achieve complete uniformity within the group, the business operated by the branches on behalf of the parent company and the assets connected therewith should be taken over and operated by the subsidiary companies with effect from April 1, 1957. As from that date these subsidiary companies have carried on the branch business on their own account. The companies are: Turners Asbestos Cement Co. Ltd., Turner Brothers Asbestos Co. Ltd., Ferodo Limited, The Washington Chemical Co. Ltd., Newalls Insulation Co. Ltd., and J. W. Roberts Limited. The consideration for the transfer will be satisfied by the issue to the parent company of shares in the subsidiary companies. The business of purchasing, shipping, and selling asbestos fibre, which is at present conducted by the parent company itself through its raw asbestos department, and the assets connected therewith have been transferred as from April 1, 1957 to Raw Asbestos Distributors Limited, an existing, but formerly non-operating, subsidiary company, for a cash consideration. When all

arrangements have been completed, Turner & Newall Limited will become a holding company operating solely through subsidiary companies both in this country and overseas.

**Change of Address.**—On April 18, the address of the Glasgow office of Tothill Press Limited, the company owning and publishing this journal, will change to 139, Bothwell Street, Glasgow, C.2. The telephone number of the new office remains Central 4646. Tothill Press Limited has been a tenant at 87, Union Street, the present address of the Glasgow office, which has always been predominantly, and is now exclusively, a railway building, for over 40 years.

**Electrical Engineers' Exhibition.**—The Electrical Engineers' Exhibition was opened at Earls Court on April 9 by Sir Edward Boyle, Parliamentary Secretary to the Ministry of Education. Equipment to the value of more than £2,000,000, both domestic and industrial is being displayed by 400 exhibitors, making it the largest display of British electrical equipment to be staged in this country. An interesting feature of the exhibition is an educational display aimed at attracting apprentices into the industry. It shows students and apprentices at work with various types of equipment, and the large range of student courses and apprentice schemes available throughout the country is well illustrated by full colour three dimensional views, showing the facilities.

**Matisa Equipment Limited Change of Address.**—To meet the need for increasing capacity, Matisa Equipment Limited has established a works at Hanworth Lane, Chertsey, Surrey, to which all correspondence should be addressed after April 15. The telephone number is Chertsey 2064; telegrams Matisa, Chertsey. For the time being the company is retaining its London office at 78, Buckingham Gate, London, S.W.1. A subsidiary company, Matisa Engineering Limited, has been

formed for the purpose of servicing and overhauling Matisa tampers, ballast cleaners, and other equipment owned by British Railways. The Chertsey works will undertake the development on railway equipment, and manufacture of small machines, with equipment and spare parts.

#### North British Locomotive Co. Ltd. Results.

—No ordinary or preference dividends are recommended by the North British Locomotive Co. Ltd. for 1956, against 5 per cent on both classes of capital for 1955. A net loss of £508,083 was incurred against a profit of £101,510, after tax of £31,630 (£54,200). Credit is taken for tax repayments and surplus provisions of £108,067 (£66,000). The changeover from the manufacturing of steam to diesel locomotives which largely took place during the year proved more difficult than could reasonably have been foreseen. As a result, it was unable to maintain a sufficient output of locomotives to absorb the overhead expenses. Although the prospects for the current year cannot be described as good, the directors hope that with a higher turnover and reduced overhead expenses this year's results will show a marked improvement on last year.

#### Wolf Electric Tools Limited Expansion.

—To offer a more prompt, efficient repair service to their portable electric tool users in the Home Counties, Wolf Electric Tools Limited has moved its Head Service Department from 239, Acton Lane, London, W.4, to larger premises in Shepherds Bush, London, W.12. The department consists of a new two-store office block with separate repair workshops in which the most modern repair equipment is installed. Machines submitted for repair are returned to the user in the quickest possible time, thus reducing to a minimum any delay on work in which the tools are being employed. After repair, each tool is tested for speed, power, current consumption and general running characteristics. Tools in need of service should be addressed to Wolf Electric Tools Limited,

### Decorations at St. Pancras for Royal Journeys



*The main archway at St. Pancras, London Midland Region, which, with the platform, was decorated for the recent journeys of the Queen and the Duke of Edinburgh to and from Sudbury, Staffs*

Head Service Department, Newlon Works, off Stanlake Villas, Stanlake Road, Shepherds Bush, London, W.12. The telephone number is Shepherds Bush 4414/5/6. A comprehensive stock of spare parts is also maintained.

**Schoolboys' Study Courses at British Railways Establishments.**—Two hundred public and grammar schoolboys from all parts of England, Scotland, Wales, Northern Ireland, and the Channel Islands, are spending a week of their Easter holidays seeing for themselves the many careers now open to them in the engineering, commercial, and operating departments of British Railways under the railway modernisation plan. Small parties are visiting various centres in the six Regions, including Bristol, Darlington, Eastleigh, Glasgow, Southampton, and York. Besides seeing practical demonstrations, they undergo short courses of instruction through talks and films. The visits, the first of which began on April 8, have been arranged in conjunction with the Public Schools Appointments Bureau and the Central Youth Employment Executive of the Ministry of Labour.

## Forthcoming Meetings

Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.

April 15 (Mon.).—Permanent Way Institution, London Section, at the headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper (illustrated) on "Effect of new forms of motive power on the permanent way—the Mechanical Engineer's point of view," by Mr. E. S. Cox, President-Elect.

April 18 (Thu.).—Diesel Engineers and Users Association. Annual luncheon at the Connaught Rooms, London, W.C.2.

April 25 (Thu.).—Railway Correspondence & Travel Society, Sheffield Branch, at the Y.M.C.A., Fargate, Sheffield, at 7.15 p.m. Paper on "Railway rambles in the S.E. Midlands," by Mr. T. Routhwaite.

April 26 (Fri.).—Institution of Railway Signal Engineers, Bristol Section, in the Meeting Room, Temple Meads Station, Bristol, at 5.30 p.m. Paper on "Axle counters," by Mr. H. A. Cod (Tyer & Co. Ltd.).

April 26 (Fri.).—Railway Correspondence & Travel Society, West Riding Branch, at the Talbot Hotel, Bradford, 7.30 p.m. "The North Eastern Railway, past and present," by Mr. T. E. Routhwaite.

April 27 (Sat.).—Railway Correspondence & Travel Society, Lancs and North-West Branch, at All Saints' Rectory, Droydsden Road, Newton Heath, Manchester, 10, at 6.30 p.m. Paper on "Some railway byways of North Somerset," by Mr. W. R. Dyer.

April 27 (Sat.).—Railway Correspondence & Travel Society, Sussex and Kent Branch, at the Railway Hotel, Brighton, at 7 p.m. Paper on "The main line services of the L.B.S.C.R.," by Mr. O. J. Morris.

April 27 (Sat.).—Railway Correspondence & Travel Society, South of England

Branch, at the Y.M.C.A. Library, Friar Street, Reading, at 6.30 p.m. Paper on "Distribution of rolling stock," by Mr. A. N. Legg, of the Rolling Stock Section, Chief Operating Superintendent's Office, Western Region, Paddington Station.

April 27 (Sat.).—Stephenson Locomotive Society. Notts Coalfield special train tour, including new lines. Nottingham (Midland) 2.53 p.m. Birmingham (New Street), 12.48 p.m.

April 30 (Tue.).—Railway Correspondence & Travel Society, East Midland Branch, at Nottingham at 7.30 p.m. Paper on "From Webb compound to Claughton," by Mr. J. F. Clay.

April 30 (Tue.).—Institute of Transport, at the Connaught Rooms, Great Queen Street, London, W.C.2, at 12.30 for 1 p.m. Informal luncheon. Principal guest: Mr. Gerard d'Erlanger, Chairman of B.O.A.C.

## Railway Stock Market

Stock markets displayed strength and activity in front of the Budget in the hope of tax concessions to industry as an incentive to increased production and expansion in export trade. Most buying centred on industrial shares, but British Funds were active, too, though they failed to hold all an earlier rise despite continued talk of lower bank rate possibilities.

There was only very limited interest in foreign rails and Antofagasta ordinary stock receded from 32 to 30½, while the preference stock eased from 45 to 44½. Business at 43½ was recorded in Chilean Northern debentures and in Costa Rica ordinary stock at 25, but United of Havana second income stock eased from 8½ to 8 and the consolidated stock again transferred around 2½. Dorada ordinary stock was again quoted at 52½, while elsewhere, Brazil Railway bonds showed business at 5½. Taittal Railway shares marked 11s. 9d. International of Central America common shares were maintained at 37½.

Canadian Pacifics, helped by the full report and accounts, were \$66½, compared with \$65½ a week ago; the 4 per cent preference stock eased fractionally to £58, but the 4 per cent debentures strengthened from £70½ to £71½. White Pass shares at \$22 were virtually the same as a week ago. In other directions, Nyasaland Railways shares kept at 12s. 9d. with the debentures at 61.

Engineering and locomotive building shares reflected the pre-Budget strength of stock markets. Vickers, for instance, rose on balance from 43s. 9d. to 45s. 1½d. and Cammell Laird 5s. shares from 11s. 9d. to 12s., while British Insulated were 2s. 9d. higher at 53s. 9d. Pressed Steel 5s. shares moved up 1s. to 14s. 10½d. while the new debentures, which are £50, paid, rose sharply to £59½. Strong demand was in evidence for Clarke Chapman on further consideration of the financial results, and the price advanced to 158s. 1½d. compared with 154s. 4½d. a week ago.

Associated Electrical were strong, helped by Lord Chandos' reference to the group's good order book, and as compared with a week ago, rose from 62s. to 67s. 3d. English Electric strengthened from 59s. to 58s. 3d. and General Electric from 54s. 6d. 57s., while Westinghouse gained 2s. at 83s. 9d. Take-over talk persisted in regard to the Brush Group, and the 5s. shares strengthened afresh from 5s. 10½d. to 6s. 1½d.

G. D. Peters firmed up from 30s. to 30s. 7½d. in response to the additional remarks on the position and outlook made at the annual meeting. Birmingham Wagon shares came back from 20s. 10½d. to 20s., and at Glasgow, Hurst Nelson lost 6d. at 36s. Beyer Peacock rose to 44s. Charles Roberts 5s. shares have been quite well maintained at 11s. 4½d., Wagon Repairs 5s. shares moved up from 13s. 6d. to 14s. and Gloucester Wagon 10s. shares also changed hands around 14s. North British Locomotive firmed up to 12s. 6d. Crompton Parkinson 5s. shares strengthened from 16s. 1½d. to 16s. 4½d. T. W. Ward advanced strongly from 70s. 3d. to 74s. 9d. on the prospect that the scrap metal trade may receive a boost in the future from shipbreaking arising from the new defence plans.

George Cohen 5s. shares also moved up further from 10s. 1½d. to 10s. 9d. John Brown shares improved to 36s. 9d. with the general trend. Tube Investments rose to 65s. 6d., but the new 5½ per cent debentures were at a discount of £1. Guest Keen were good at 50s., Ruston & Hornsby held steady at 32s. 6d. while British Timken rose to 52s. 9d. and British Oxygen at 36s. 9d. again move higher.

## OFFICIAL NOTICES

### A LEADING ELECTRICAL MANUFACTURING COMPANY

wishes to appoint to its staff a SENIOR DESIGN DRAUGHTSMAN for Control gear design and layout work in a.c. and d.c. electric traction. A salary of £900 to £1,100 is offered for this key position in a rapidly expanding department. A house is available for the successful applicant. Interviews can be arranged locally at weekends. Please write in confidence to Box 318, The Railway Gazette, 33, Tothill Street, London, S.W.1.

### A SENIOR CONTROL GEAR DESIGN ENGINEER

for a.c. and d.c. electric and Diesel-electric rolling stock is required by a leading manufacturing company. The appointment carries a salary of £1,100 to £1,300 per annum, and there is a housing scheme in operation. Interviews will be arranged at the convenience of the applicant. Please write with full particulars to the Staff Manager, Box 319, The Railway Gazette, 33, Tothill Street, London, S.W.1.

LONDON TRANSPORT requires ENGINEERING ASSISTANT in drawing office at Acton Works for duties concerned with problems arising from design of new railway rolling stock and maintenance of existing stock. Candidates should possess a recognised qualification in Mechanical Engineering, have some knowledge of design of bodies and bogies for Executive's railway rolling stock, and be able to control staff. Salary range £750-£840; free travel; medical examination; contributory superannuation scheme after probation. Applications within 14 days to Recruitment and Training Officer (F/EV 630), London Transport, 55, Broadway, S.W.1.

### BRITISH RAILWAYS: SCOTTISH REGION: CHIEF INSTRUCTOR

Scottish Region, Works Study School, Glasgow. Applications are invited for the post of CHIEF INSTRUCTOR, Scottish Region Works Study School, Glasgow. Thoroughly conversant with Work Study techniques and ability to organise Works Study Courses. Preference will be given to applicants with proved qualifications and lecturing experience. Applicants will be in competition with candidates from within the Commission's service. Salary £1,275, rising to £1,485. Applications in writing, giving age, education, experience and qualifications, should be addressed to the General Manager, British Railways, Scottish Region, 302, Buchanan Street, Glasgow.

FOR DISPOSAL.—Approx. 3 miles of STANDARD GAUGE RAILWAY TRACK, in good condition, and comprising of B.S. 9½ lbs. section B.H. Rails, in chiefly 60-ft. lengths; S.I. Type Chaired Sleepers and Turnouts and Crossings, etc. The track is lying in North Wales, and inspection can be arranged by appointment. Contact Eager Construction Co. Ltd., Scunthorpe. Tel. 4513/7.

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